

The JOURNAL of AGRICULTURE AND HORTICULTURE

Volume 23

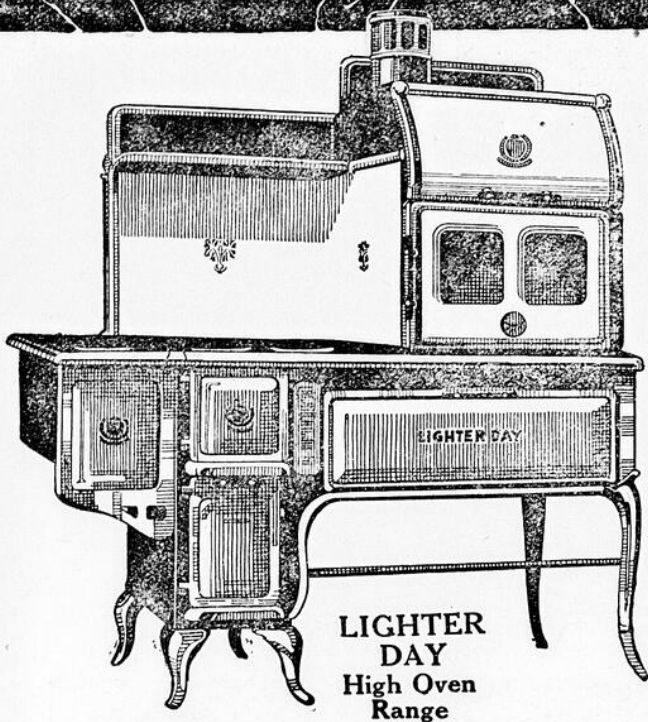
January 1st 1920

Number 7



NEW YEAR SYMBOLS OF PEACE AND RECONSTRUCTION

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE OF
THE PROVINCE OF QUEBEC.



LIGHTER DAY
High Oven Range

A Modern Range Saves Hours of Housework

Clare Bros. Ranges are modern.

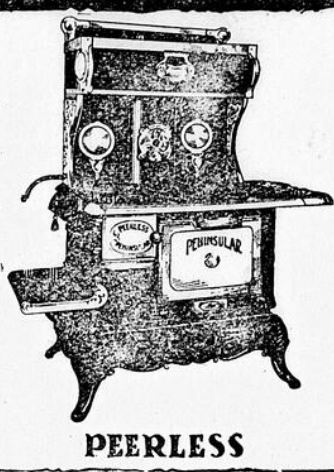
They clean easily—without black-leading. For they are finished with porcelain-enamel panels.

They have plain nickel parts. They have polished tops.

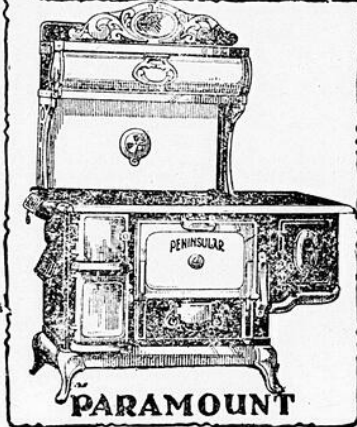
They are easy to “fire up” and “shake down.” Grates work smoothly—without sticking—without buckling—without loss of coal.

They have bright, reliable ovens fitted with thermometers, to do away with guesswork in baking.

You can have a modern Clare Bros. range the exact size you want, and with whatever equipment you need. They can be supplied with Warming Closets, Hot Water Res-



PEERLESS



PARAMOUNT

ervoirs, or Hot Water Connections for the boiler.

Both cast-iron or steel ranges are produced with Clare Bros. modern features.

If your dealer cannot supply you write for illustrated booklet showing these ranges.

LIGHTER DAY High Oven Range Burns Coal or Wood

Most popular of all ranges because the High Oven does away with stooping. A special booklet describing this remarkable range will be sent on request.

CLARE BROS. & COMPANY, Limited
Preston, Ont.

CLARE BROS STOVES & RANGES.

HOLSTEIN FOR SALE

1 bull born in March 1919, 2 heifers two years old, several calves to be born in January and later, 3 young Leicester females, 5 grand Yorkshire imported hogs broods, to be born in February and March. All those animals are registered. Apply to ARTHUR ROY, St. Perpetue.

A Constipation Cure

A druggist says: “For nearly thirty years I have commended the Extract of Roots, known as Mother Seigel’s Curative Syrup, for the radical cure of constipation and indigestion. It is an old reliable remedy that never fails to do the work.” 30 drops thrice daily. Get the Genuine, at druggists.

YOU CAN’T CUT OUT A BOG SPAVIN OR THOROUGHPIN but you can clean them off promptly with



ABSORBINE

and you work the horse same time. Does not blister or remove the hair \$2.50 per bottle, delivered. Will tell you more if you write. Book 4 R free. ABSORBINE, JR., the antiseptic liniment for mankind, reduces Varicose Veins, Ruptured Muscles or Ligaments, Enlarged Glands, Wens Cysts. Allays pain quickly. Price \$1.25 a bottle at druggists or delivered.

W. F. YOUNG Inc., 134 Lyman Bldg., Montreal, Can. Absorbine and Absorbine, Jr. are made in Canada.

GROUND LIMESTONE

THE special advantages of our Pulverized Limestone for agricultural purposes, are: Exceptionally High Analysis, Very Finely Ground, and Reasonable Prices. Send your address, and we will mail Circulars and Prices. — THE DOMINION LIME CO., Sherbrooke, Que.

ROOF WITH METAL

Send us the size of any roof that needs covering and we will mail you a very interesting proposition.

“EMPIRE” CORRUGATED IRON “EASTLAKE” STEEL SHINGLES

are admitted Standards of Quality

35 years’ reputation for sterling reliability is behind “Metallic” goods. 35 years’ experience in filling farmers’ needs is at your service.

Write today for Roofing Booklet E

The METALLIC ROOFING Co. Limited

196 MANUFACTURERS

TORONTO and Winnipeg

USE “METALLIC”

Dressed Beef Hogs Lambs Calves Poultry

Country farmers and shippers by sending above to us will get full market prices and returns inside twenty-four hours. Write us to have your name put on our mailing list for weekly prices and weekly market reports.

THE HARRIS ABATTOIR CO., LIMITED
Bonsecours Market
Montreal, Que.

FOR SALE

TWO splendid Holstein bulls, 19 months old; one from the 20th of November, all registered, moderately priced. Apply to WILLIAM WATKINS, St. Germain of Grantham, Que.

REQUISITE FOR FARMERS CAST IRON “RIVAL” STOVE

Farmers, the true opportunity for you Weighing 700 lbs. cast iron and guaranteed in all respects, this stove includes a large fire-box, evolves a great deal of heat; is made specially for our Canadian homes. The oven is guaranteed for meats and pies good cooking, and a large water basin necessary for farm is fixed to the stove.



Get direct from us, for prices are lower. Write for catalogue and prices.

La Fonderie de l’Islet, Limitée

l’Islet Sta., Que.

Good agents wanted for boilers and stoves selling, etc.

Make Money in Your Own Home

We Supply Yarn Free and Pay You for Your Work.

The whole world needs socks. In every country, in every city, in every town and in every village—in every corner of the world, in fact—there is an acute shortage of hosiery.

This great demand is your personal opportunity. It is your chance to add substantially to your income. It is the weapon with which you can meet the constantly increasing high cost of living. You can make money pleasantly and easily in the privacy, freedom and comfort of your own home. This is an unusual advertisement, due to an unusual world-condition. We are a firmly established Canadian business firm engaged in the manufacture of high-grade seamless socks. Our business connections are world-wide. We have been in business many years.

We have always preferred home manufacture to factory production. We believe in the independent employee. We know that the best work is that which is done by well-paid contented people in happy homes.

These socks can be made by men and women. Knitting experience is unnecessary. The Auto Knitter, a marvellous machine, does the work. Anyone can quickly learn to operate this machine.

Workers Wanted Everywhere

For the reasons above stated—the unprecedented world-demand for hosiery—we need more workers—thousands of them. We need you.

We need all the socks you and your family can make on the Auto Knitter. We need this labor badly. We will make a contract to pay you a Fixed Wage on a piece-work basis. In this contract you take no risk. You can work for us as much as you want or as little as you want—spare time or full time. And for every dozen pairs of socks you send us, we will pay you a liberal wage.

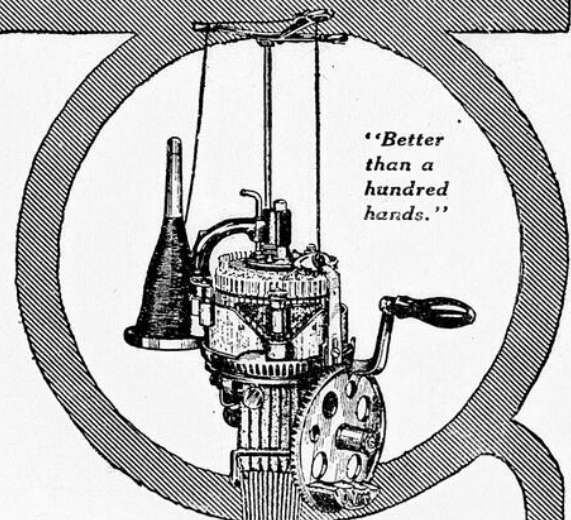
With every Auto Knitter we send a supply of wool yarn FREE. We also supply, FREE, the yarn needed to replace that which is used in making the socks you send us.

The yarn we supply is made especially for the Auto Knitter. It is the softest and warmest, and uniformity in quality, weight and shade is always obtainable.

You are, of course, at liberty to dispose of the output of the Auto Knitter as you see fit, or to buy your own yarn; you can also use the Auto Knitter to make at a remarkably low cost all the hosiery your family needs—wool and cotton.

But please remember this: There are absolutely no strings tied to our Wage Agreement; it is a straight, out-and-out Employment Offer of a Fixed Wage on a piece-work basis—a good pay for your services alone.

The Auto-Knitter is the most modern development of the hand knitting machine. It embodies many exclusive improvements, as worked out by us in our own factory. We are manufacturers of the Auto-Knitter, our machines are fully guaranteed. In doing business with us you are dealing with a responsible manufacturing firm, so we could not afford to make, and do not make, any claim for the Auto-Knitter that is not amply borne out by fact.



A turn of the handle and 60 perfect stitches are knitted. stitches can be made in an operator of average experience report that, with a completed sock can be made

and more smooth, even. Thousands of such few minutes by the hence. Many of our the Auto Knitter, a in less than 10 minutes.

When the Auto Knitter just like having many extra working for you; that is "Better than a Hundred Hands." It makes the sock—top, body, heel and toe without removal from the machine. It weighs about 20 pounds, can be clamped to any ordinary table or stand, and can be used anywhere. It is easily learned. Experience in knitting and familiarity with machines are totally unnecessary. Complete instructions about how to use the Auto Knitter are sent to every worker. The Auto Knitter is to hand knitting what the sewing machine is to hand sewing.

The Genuineness of These Testimonials Guaranteed Under a \$5000 Forfeit

MAKES \$35.00 IN ONE WEEK
The Auto Knitter is one of the best investments anyone could make. I can make three pairs of socks in an hour. In one week I made \$35.00 from private trade alone. It is the finest and cleanest work I have ever done, and I would not be without it. Wheatley, Ont.

OPERATED BY BLIND WOMEN

I have now been using three of your machines, and they give good results. With a little patience at the start, I have succeeded in doing good work, which has always been accepted by you. You may be surprised to know that some of my work has been done by blind women, and it is impossible to recognise their work from mine. I am pleased with the business dealings I have had with you and hope that future dealings will be just as cordial as they have been in the past. Montreal, Que.

NOT A SINGLE PAIR REJECTED

It is not only profitable, but helps to pass many a dull hour away. I can knit two pairs of half-hose in an hour, which I think is good. The machine is what you claim it to be and does its work right, and being so small takes up but little room. Of the socks I have sent, I have not had a single pair rejected, which is clear evidence that the machine can turn out good work. Fernie, British Columbia.

Positively Not "a Canvassing Scheme"

The Auto Knitter gives you the opportunity to make money during your spare time. It also gives you a chance to devote your entire time to the business, and this—to be independent of bosses, rules, time clocks, working hours, etc. Our Wage Contract is in no sense a disguised "canvassing scheme," "agency," or "open-a-store" proposition. Here is the proof—read the evidence from some of our workers.

I am sending by Express four dozen pairs of socks. Will you kindly make the replacement yarn up to twelve (12) lbs. and send the rest of wages due me in cash. Montreal, Que.

Have sent you to-day by Express four dozen pairs of socks. I thank you for your promptness in returning replacement yarn and wages, which always come by return mail. Woodstock, Ont.

I am sending you 51 pairs of socks to-day by Express. Please send replacement yarn and money order for wages. Brantford, Ont.

I am sending you 12 dozen pairs of socks this morning by Express. I enclose wage receipt for last shipment. Return replacement yarn as usual. Waldemar, Ont.

I am shipping to you to-day 18 dozen (216 pairs) of socks. Express charges collect. Please send replacement yarn and also yarn for wages due me as usual. Vancouver, B.C.

I received the Money Order and am to-day sending another shipment of 52 pairs of men's socks. Please return replacement yarn and send me yarn instead of cash for wages due me. Windsor, Ont.

I am to-day forwarding to you by Express (charges collect) ten dozen pairs of socks which I have knitted on the Auto Knitter. Regina, Sask.

I am sending eighteen (18) dozen pairs of socks by Express, charges collect. I like the work, as it passes many a dull hour away, and I can knit two pairs of socks in an hour. Fernie, B.C.

I am sending by Express 54 pairs of socks. Please send wages due in cash and return replacement yarn. I think the machine is wonderful and I also think the pay is very good. Calt, Ont.



Write today for our Liberal Wage Offer

No matter where you live, we want you to know all about the Auto Knitter and the immensity of our world-wide institution. We want to tell you of the pleasant and profitable place ready for you in our organization and the future you can make for yourself with the Auto Knitter.

We want you to compare our work and the money that is in it with what people are paid for long, hard, grinding toil in office, store, mill or factory. We want you to know the substantial amounts that even a small part of your spare time will earn for you. Then we want you to read the glowing statements of our perfectly satisfied workers and learn how, if you desire, you can have your own home factory and sell your output, both wholesale and retail. Write to-day—send the coupon and three cents in postage to cover cost of mailing, etc.



The Auto Knitter Hosiery (Canada) Company, Limited

Dept. 491-K. 607 College St, Toronto, Can.

The Auto Knitter Hosiery (Canada) Co., Limited, Department 491-K, 607 College Street, Toronto, Canada

Send me full particulars about Making Money at Home with The Auto Knitter. I enclose three cents postage to cover cost of mailing, etc. It is understood that this does not obligate me in any way.

Name.....
Street.....
City..... Prov.....

Make Sure of Your DE LAVAL Cream Separator



Early in 1920

There's no happier or better way of starting the New Year right than by making sure of a new DE LAVAL, if you are either without a cream separator or are using an inferior or half-worn-out machine that should be replaced.

For three years now, thousands of those who wanted a DE LAVAL have had to wait weeks for it and many have had to buy a second grade separator. The demand has simply exceeded the possible supply, though more DE LAVALS have been made each year than ever before.

More and better DE LAVALS will be made this year than ever before—as many as available plant additions and skilled workmen can produce—but the demand gives every indication of being even greater still.

Order your DE LAVAL now. Make sure of getting. Let it save half its cost by Spring.

See the nearest De Laval local agent at once, or write the nearest De Laval office below for any information desired.

THE DE LAVAL COMPANY, Ltd.
MONTREAL PETERBORO WINNIPEG VANCOUVER
50,000 Branches and Local Agencies the World Over



**GET EGGS
ALL WINTER**

The big profits are in winter eggs. Why not get your share? You can make your hens lay all winter by giving them

Pratt's Poultry Regulator

the Guaranteed Poultry Tonic and Conditioner. Gives the birds a keen appetite, helps them digest every particle of feed, makes them healthy and vigorous, and drives them to the nest. Tones up the organs of egg production.

Costs little—does much. Sold by dealers everywhere in popular-priced packages, also in money-saving 25-lb. pails and 100-lb. bags. About one cent a month per bird is all it costs.

Money Back If Not Satisfied.

PRATTS Roup Remedy is guaranteed to prevent and cure colds and roup.

Use it as a preventive for healthy birds in cold, stormy weather.

At your dealer's in powder or tablet form.

Write for FREE book on the Care of Poultry.

Use PRATTS ANIMAL REGULATOR, the Guaranteed Stock Tonic.

Pratt Food Co. of Canada, Ltd.
328G Carlaw Ave., Toronto. PW-8



BRAND All Wool Underwear

Worn for the last fifteen years by Canada's nation builders—on railroads, farms and the Empire's battlefields; in mines and in construction camps. Warmth and durability. Medium and heavy weights. Combinations and two piece suits. Guarantee with every garment. Moderate prices. Sold everywhere.

Bates & Innes Limited
CARLETON PLACE
Ontario

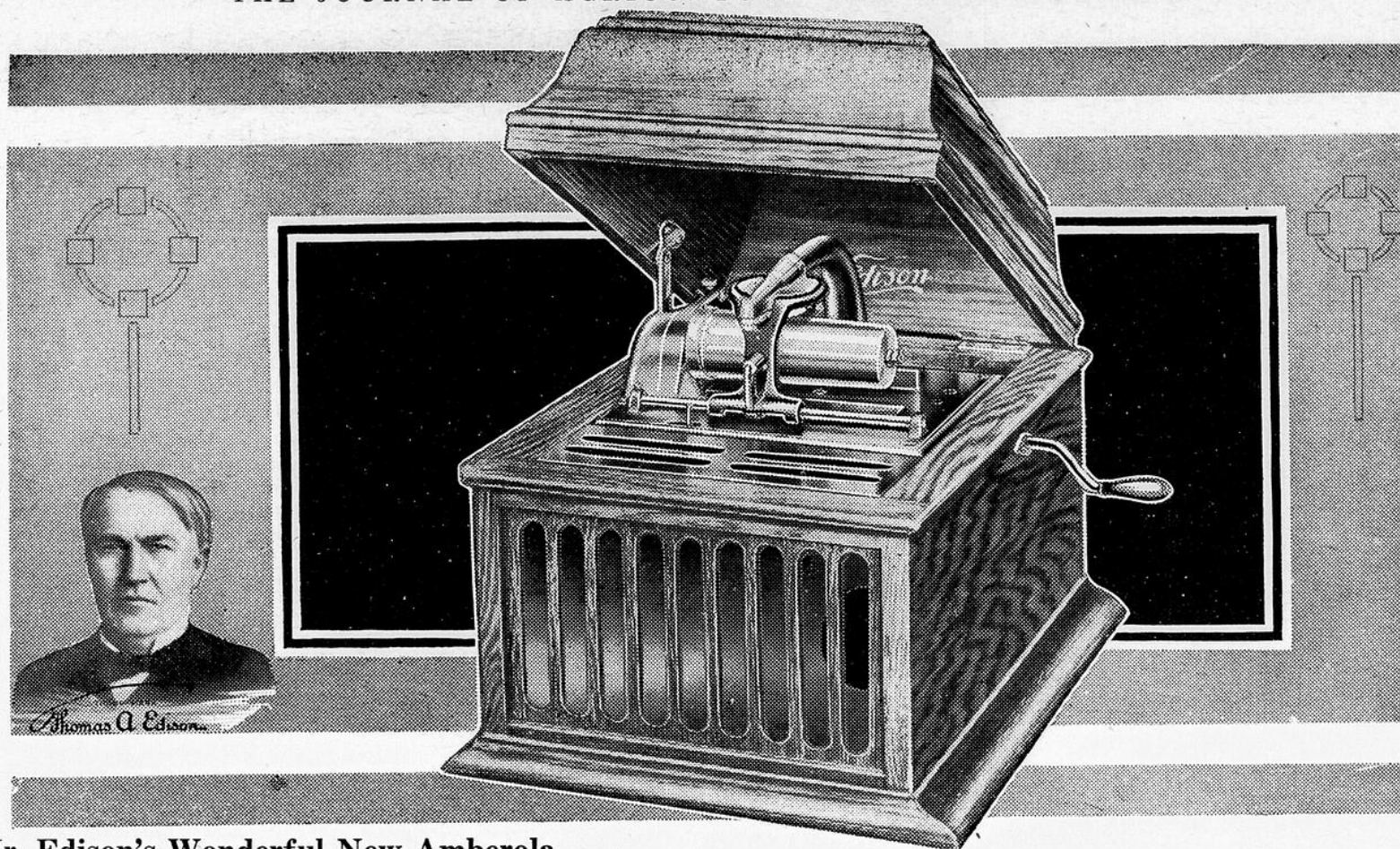
Xtravim
Feed Molasses

- cuts feed costs in half
- increases yield of milk
- fattens cattle, horses and hogs
- keeps all stock in condition.

Xtravim Feed Molasses means an all-round saving to the farmer, dairyman or stockman. It makes old hay, shorts and middlings into the most palatable, well balanced feed that is licked up clean. Xtravim contains a 70 per cent. content of carbohydrates—the energy-supplying element of feed. Improve your stock and increase the revenue from your farm by feeding Xtravim. Write today for our free booklet on Xtravim Feed Molasses. It will save you money.

Rose & Laflamme, Limited,
504 St. Paul St. West, Montreal
Distributors for Canada

Feed dealers will find the sale of Xtravim a profitable proposition.



Mr. Edison's Wonderful New Amberola

Sent on Free Trial!

Read the Coupon Below! An astonishing offer—the New Edison Diamond Amberola, Mr. Edison's great new phonograph with the Diamond Stylus reproducer, and 12 brand new Blue Amberol Indestructible 4-Minute Records sent to you on **absolutely free trial**. Send no money—just fill out the coupon below and send it to us at once. We will send you the complete outfit immediately. No C.O.D. Entertain your family and friends with the latest song hits of the big cities. Laugh at the side-splitting minstrel shows. Hear anything from Great Opera to Comic Vaudeville. Judge for yourself just how much this great phonograph would mean to your home. Decide if you can get along without it. After the trial in your own home, make up your mind. If you decide not to keep the outfit, send it back to us at our expense.

Only \$1⁰⁰ After Trial If you wish to keep Mr. Edison's superb new instrument after the free trial, send us only \$1.00. Pay the balance of \$71.80 for the complete outfit in easy payments of only \$6.00 for 11 months and \$5.80 for the 12th month, total \$72.80. Remember the 12 brand new Blue Amberol Indestructible 4-minute records are included with this outfit.

SEND NO MONEY
Just the Coupon!

Think of it—a \$1.00 payment, and a few dollars a month to get this outfit of Mr. Edison's new phonograph with the Diamond Stylus reproducer, the life-like music—the same Blue Amberol Records—all the musical results of the highest priced outfits. The finest, the test that money can buy at very much less than the price at which imitations of the Genuine New Edison Diamond Amberola are offered.

After years of labor on his favorite invention, Mr. Edison has made the music of the phonograph true to life. There is no reason now—especially since we make this rock-bottom offer—why you should be satisfied with anything less than Mr. Edison's genuine instrument. You are under no obligation on this free trial offer. Hear the New Edison Diamond Amberola in your own home before you decide.

Convince yourself first. Get the New Edison Diamond Amberola in your home on free trial. See what a wonderful instrument it is—how it brings the music of the world's greatest singers and players the sweet old time melodies, the jokes of the funniest vaudeville actors, all right into your own parlor as if they were there in person. See for yourself how much you need the New Edison Diamond Amberola in your life. See how much happier it will make your home. Just fill out the coupon and send it in. Of course, we do not want to ship an outfit to a person who can not afford to at least pay on easy payments (and when you get a free trial it must be understood that you can afford to keep it). Yet, no one is under any obligations to keep an outfit if it is not entirely satisfactory. If it is not just what you want for your home, return it at our expense; you, not we, must judge what the Edison phonograph means to you and we accept your decision cheerfully and without question.

F. K. BABSON, Edison Phonograph Distributors, Dept. 201
181 Simcoe Str., Toronto.
U. S. Office, Edison Block, Chicago, Ill.

No obligation to buy in sending this coupon; this is just an application for a Free Trial

F. K. BABSON, Dept. 201, 338 Portage Avenue, Winnipeg, Manitoba.

Dept. 201, 181 Simcoe Str., Toronto.

Dear Mr. Babson:—As per your offer, I should like to hear Mr. Edison's wonderful new style phonograph in my home on free trial. If I decide to keep the outfit, I will have the privilege of the rock-bottom price of \$72.80 direct from you on special terms. I merely agree to take the outfit promptly from the depot, pay the small express charges, and if I do not find it thoroughly satisfactory, I reserve the right to return the outfit at once at your expense. Otherwise, I will send the first payment of \$1.00 within forty-eight hours after the free trial or as soon as possible, in no case exceeding one week, and will make monthly payments thereafter of \$6.00 for 11 months and \$5.80 for the 12th month. Total \$72.80. The outfit is to remain your property until the last payment has been made. (This offer is not open to anyone under 21 years of age. If you are under 21 ask your father, mother or guardian to fill in and sign this coupon for you.)

My name Address or R.F.D. No.....

City State Ship by Express

Shipping point Ship by Occupation

Age.....Married or Single.....If steadily employed at a salary please state

How long a resident in your neighborhood and your vicinity?.....If there is any possibly of changing your address during the next year, what will be your next address?.....

Crop and Trade Conditions Throughout the Dominion

Complete reports submitted on conditions in the various provinces of the Dominion at annual meeting of the Bank of Montreal will be of special interest to mercantile and farming communities.

BANK OF MONTREAL ANNUAL MEETING

At the Annual Meeting of the Bank of Montreal complete reports were submitted by the Superintendents of the Bank, dealing with trade and farming conditions in the various provinces of the Dominion. These reports cover the particular operations carried out in the various sections of the country and on this account become of very special interest to the mercantile and farming communities desirous of keeping in touch with the important developments that are occurring throughout Canada.

Quebec.

The cut of lumber during the past season was not as large as usual. Practically all stocks have been sold and shipped out. Prices were high. Labour conditions show improvement and a large cut is looked for this winter.

The demand for pulpwood from the United States was uneven, but stocks have been well disposed of and high prices are expected to be maintained.

The paper mills of the Province continue working to capacity, the demand for newsprint and better qualities of print papers exceeding the supply.

Manufacturing in nearly all lines has been generally satisfactory, although production is still limited by scarcity of skilled labour and raw materials.

Hay and cereal crops were average. Root crops were large, but potatoes suffered from rot. Pasturage was good, and dairy products will show an increase.

With the exception of asbestos, there is little mining done in the Province. Asbestos prices are good and shipments are well maintained.

The fur business has been good, and boot and shoe manufacturers find difficulty in supplying the demand.

Shipbuilding continues active, a number of large steel vessels having been launched from different yards during the year.

The wholesale and retail trade was most satisfactory; collections were good and failures show a decrease.

There have been no exceptional expenditures during the year by the Dominion of Provincial Governments and municipalities have limited disbursements to necessary works. Practically no railroad construction was undertaken.

There is very little speculation in real estate; values and rentals are both high.

General conditions, both in cities and rural districts, are good, with no apparent slackening in trade since the termination of the war. The housing problem is everywhere acute, and those dependent on a fixed income are seriously affected by the abnormal cost of all necessities.

Ontario.

Manufacturing in Ontario has been limited only by shortage of supplies and disturbances in labor. Government credits for goods sold to Europe have stimulated manufacturing, and domestic demands have been insistent. New industries have been started, and a number of successful manufacturing concerns in the United States have been making enquiries with the intention of locating in Ontario.

Ontario farmers have been steadily bettering their position in recent years, installing modern equipment and improving their modes of living. The past year has been one of fair crops and high prices. A wet spring was followed by an exceptionally dry summer, and grain crops, with the exception of fall wheat, fell below the average. Root crops were good; corn and tomatoes were a record yield; the season was poor for all fruit except grapes. Cheese production showed a falling off. There is a shortage of hogs; sheep raising is on the increase. The cattle situation is somewhat unsettled, owing to the limited amount of feed available for carrying through the winter.

The production of lumber has been seriously reduced owing to shortage of labour. 1919 has been an excellent marketing year, with heavy sales to Great Britain and the United States, and a steady domestic demand for all classes of lumber. Prices have been unusually high, there is no accumulation of stocks on hand, and notwithstanding the scarcity of labour and increased costs of operating, the year has been a successful one. Pulp and paper have been in large and increasing demand, with soaring prices for the latter.

Mining production during the year has been curtailed. The demand for nickel fell off after the Armistice; strikes lessened the silver output. Both these situations are improving and larger production has taken place at the gold mines.

Both wholesalers and retailers report it easy to sell goods. Credits are shortened and had debts negligible.

Larger expenditures were generally made by municipalities this year in an effort to overtake works postponed during the war.

Population shows a general increase, with a tendency to drift to urban and manufacturing centres.

Values in real estate are steadily increasing. So little building took place during the war that there is now a general shortage, particularly in dwelling houses, and in consequence there is much activity in real estate and an improvement in the building trades.

There has been a continued extension in hydro-electric power during the past year, and works at Nipigon and Chippewa, as well as at other places less important will within the next two years add very largely to the available power for manufacturing and other purposes throughout Ontario.

Generally speaking, the year has been one of great activity throughout the Province.

Renew the Soil Make Your Farm Pay Better

SOIL renewal as practised in Europe accounts for the very high yield per acre attained in European farms, and soil renewal simply means restoring plant food and humus.

This is done by applying ordinary stable manure and commercial fertilizers.

Harab-Davies Fertilizer is a scientific compound which contains Nitrogen or Ammonia, Phosphoric Acid and Potash in readily soluble form. Experience absolutely proves that it is more profitable to work 50

acres with a good fertilizer than 100 acres without it.

Harab-Davies
FERTILIZERS

Fertilizing means not only bigger crops, but better and stronger crops.

It is strictly a quality article. Pound for pound it is positively the cheapest as well as the best fertilizer offered.

Write for our booklet, "Fertilizer Results by Satisfied Users"—sent free on request. Read what farmers in all parts of Canada have accomplished with Harab-Davies Fertilizer.

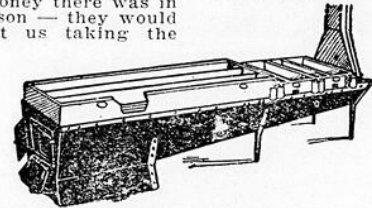
ONTARIO FERTILIZERS LIMITED

Dept. J.A. WEST TORONTO, ONT.

Here's the Evaporator to Solve the Syrup and Sugar Problem

Thousands of grove owners do not work their groves for very little reason. Lots of them just can't make up their minds. Yet if we were to put a proper outfit in their grove and they saw it work so easily and the money there was in it — for one season — they would fight to prevent us taking the

outfit away again, even if the cost were a good deal more. An untapped grove these days is like an untapped reservoir with thirsty people around. A big demand and no supply. Why not put a



GRIMM CHAMPION OUTFIT

In your grove? One of a right size to work your bush to full capacity. Then there will be no waste and every dollar extra means more production. We can fit out any grove from sap spout to Champion Evaporator. Get in touch with us right away.

The Grimm Mfg. Co.

59 Wellington Street, Montréal.

"The Tobacco with a heart"

A Favorite Throughout Quebec

MACDONALD'S
CROWN
CHEWING TOBACCO

LAKESIDE AYRSHIRE

We still have a few choice young bulls, all sired by the Champion-ship Bull, Auchinbay Sir Andrew (imp) 54824 (15781).

A certificate of tuberculin test will be furnished with each animal. Write for catalogue.

GEORGE H. MONTGOMERY, K.C., 705 Dominion Express Building, Montreal, Que.

TO FARMERS

IF YOU ARE
LOOKING FOR

Safe and Profitable Investments

Dont fail to call on us the next
time you come to Montreal.

Through honest dealing, this
firm has built a reputation
which it intends to live up to.

WE OWN AND OFFER

DOMINION BONDS VARIOUS ISSUES AT CURRENT RATES.

MUNICIPAL DEBENTURES

Cities or Towns.	Maturing	Yielding
EDMONTON	1930-53	6%
MONTREAL	1923	5 1/2%
MONTREAL	1956	5 1/2%
GRAND'MERE	1946	5 1/2%
MAISONNEUVE	1950	5 1/2%
MAISONNEUVE	1952	5 1/2%
N. VANCOUVER	1960	6%
MONTREAL EAST	1922	5 1/2%

SCHOOL DEBENTURES

	Serial	Yielding
ST-AGATHE (Cath)	1936	5 1/2%
KENOGAMI (Cath)	1936	5 1/2%
SHERBROOKE (Protestant Board)	1936	5 1/2%

INDUSTRIAL DEBENTURES

SAGUENAY PULP & WATER POWER	1921-34	6 3/4%
FRONTENAC BREWERIES (With Premium)	1951	6%

PUBLIC SERVICES

MONTREAL TRAMWAYS	1924	6.35
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Further particulars upon request.

Versailles Vidricaire Boulais

VERSAILLES
BUILDING

LIMITED

MONTREAL

QUEBEC
S.-John Street, 198

OTTAWA
Imm. Banque Nationale

BOSTON
60, State St.

VETERINARY PHARMACY OF DR. GRIGNON

Farmers, give a trial to the famous "poudre de Condition Belge" (Belgian Condition Powder) for all animals on the farm. It purifies the blood, stimulates appetite, increases the weight, protects against diseases, cures the sick, facilitates the bringing forth and gives to animals a soft and shiny coating.

Get a bag or two of this marvellous "POUDRE BELGE" (Belgian Powder) through the intermediary of the Farmers Club or your Cooperative. Special price. Ask for our catalogue. Free consultations.

Ste. Adele, Co. Terrebonne, P. Q.

Raise Your Calves on



Blatchford's CALF MEAL

The Complete Milk-Substitute
And Sell the Milk

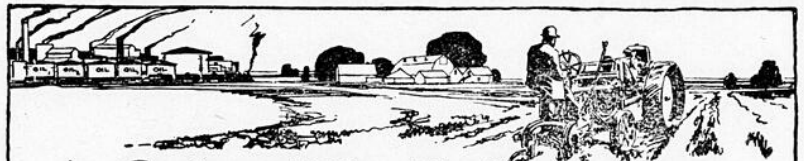
Blatchford's Calf Meal is absolutely the only milk-substitute containing all the elements necessary for rapid and healthy growth and the only calf meal that is thoroughly cooked and prepared for digestion.

Order from your local dealer or write

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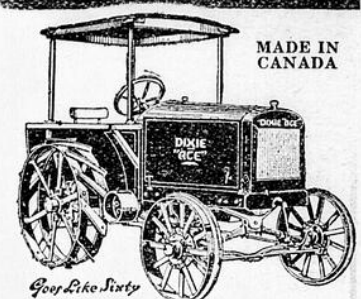
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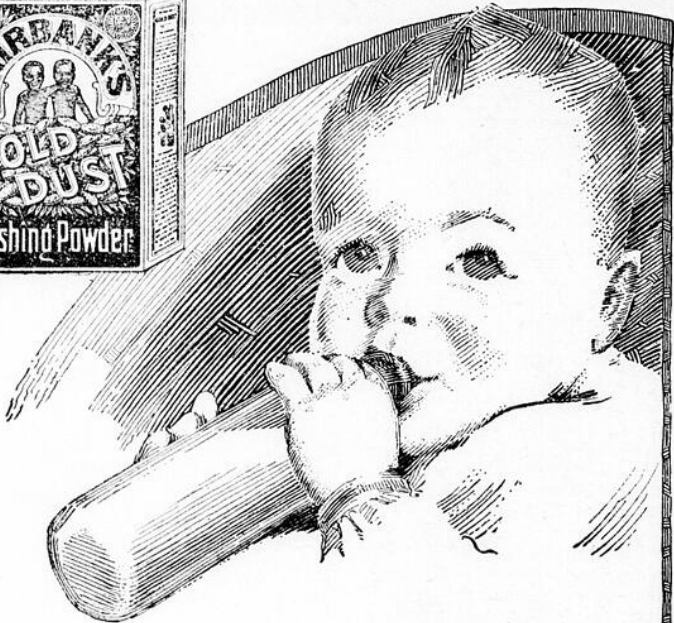
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NEW YEAR GREETINGS AND MESSAGES

GREETINGS FROM THE JOURNAL OF AGRICULTURE

The *Journal of Agriculture* is keenly interested in all matters making for progress in Agriculture. To this end it publishes each month a goodly number of carefully prepared and selected articles relating to the various branches of farming. In these days, however, farming is more than the production of food-stuffs and the selling of these to the best advantage; it should be also a *mode of life* which gives the farmer and his family an opportunity of becoming intelligent contented citizens in the highest and best sense of the term. Accordingly considerable attention is given to the promotion of those agencies that are trying to bring about better co-operation among the members of a community in social and educational matters. The *Journal* is fully aware of the many handicaps in rural life but it believes most thoroughly that it is possible to remove most of these so that farm life may have all the satisfactions necessary for the making of a contented, intelligent, prosperous people.

The *Journal* wishes that every one of its many readers a New Year filled with satisfactions that mean happiness.

W. LOCHHEAD
J. F. SNELL

Editors

A MESSAGE FROM Dr CHARRON, DIRECTOR DAIRY SCHOOL ST. HYACINTHE

Some Stumbling-Blocks in the Dairy Path.

On the threshold of a New Year every truly intelligent business man naturally pauses and looks backward over the road he has just travelled so as to locate the stumbling-blocks which have impeded his progress and to lay out plans for a better and more profitable administration during the coming period of activity. The Dairy Industry has lately become in the Province of Quebec not only the most important but one of the most intricate of the Canadian industries; hence the imperative duty for every person concerned with this industry, be he producer or manufacturer, to pause, think deeply and plan properly.

THE DAIRY FARMER

Prices of milk and milk products are soaring higher and higher. The consumer whines at the exorbitant prices asked and the producer retaliates with figures showing the high cost of production. Two stumbling-blocks lie prominently in the path of the dairy farmer: the high cost of labour and the increased tendency on the part of farm labourers to demand shorter working days.

The immense drain made on farm hands for war activities since 1914 has depleted considerably the rural population. The high wages paid in munition factories has created a persistent desire in the younger portion of the rural community for higher wages, ready pocket money, greater facilities and more leisure time for enjoyment. Much spare time and more pocket money naturally beget laziness and reckless spending coupled with dissatisfaction. Hence the exodus of farm labourers to large cities. The dairy farmer is thus left almost alone to perform the farm work required for the profitable up-keep of the dairy farm. The necessary preparation of the soil, which is the basis of successful farming, the cultivation of crops, especially hoed crops, the proper handling of live stock thus become a burden much too heavy for the farm owner and he finds himself in the predicament either of reducing his stock or losing money through insufficient care in the accomplishment of the work.

This labour problem in one of the most puzzling and the most pressing of the hour. To obviate the lack of properly trained labourers the farmer must look to labour-saving devices. To replace ploughmen tractors must be bought. This has been recognized by our local government, and it is for this reason that the Hon. Minister of Agriculture

has entered into negotiations with a firm manufacturing tractors to allow the farmers to obtain them at a very reasonable price.

The growing of corn and roots is also a necessity for the profitable operation of the dairy farm. Labour-saving in the cultivation of these crops is important. Hence the presence of convenient implements such as corn seeders, corn cultivators, corn harvesters. These are pieces of machinery which must be in the hands of the dairy farmer. But every farmer need not be the owner of each of those implements, as cooperation amongst several farmers of each locality will go a long way towards alleviating the burden of expenditure and the cost of production.

A persistent and well-conducted campaign of education by every intelligent citizen conversant with farming conditions ought to be undertaken in order to right the ideas of young farmers with regard to the glittering appearances of city life. They should be persuaded that high wages do not produce happiness. True satisfaction can only result from the proper accomplishment of work and a truly respectable and inexpensive home life.

Cooperation then in the buying and operation of labour-saving implements and a persistent campaign of education of the younger portion of the farming community are the potent means at the disposal of the intelligent farmer for removing these two stumbling-blocks from his path to success.

improperly kept machinery may be a few of the stumbling-blocks near at hand. It is the butter and cheesemakers' duty to make use of the winter months in remedying all these defects. He must do it now when he has leisure time if he desires to be ready when the busy season opens next April. He must not forget that now, when King Frost gloriously reigns, is the proper time to fill his ice house. Every factory owner, every cheese or butter-maker knows all this. He sees clearly these several stumbling-blocks but somehow or other he puts off attending to it and he finds himself unprepared when the busy season opens. Procrastination is a sin which is always costly in its consequences. It is, therefore, the duty of the factory-owners and the butter and cheese-makers to remove all stumbling-blocks in the path of success by proper advice to the patrons to procure facilities for the cooling of milk and to attend immediately to such repairs in the factory as may be found necessary. An abundance of good clean milk, properly cooled and well handled in a properly equipped factory, is sure to produce good returns in money.

Another stumbling-block in the path of success is the lack of knowledge on the part of the butter or cheese-maker. This is the time for him to remove it. Reading of dairy periodicals, and attendance at the provincial dairy school are means at his disposal to meet the want. During the winter months he has the necessary leisure time to attend to such means of adding to his store of knowledge. He must refresh his memory with regard to methods, for progress is made from year to year, and he must keep abreast if he does not want to become a back number. Difficulties have been solved, new methods devised, and the winter months are the time when he must make himself acquainted with the new developments.

A. T. CHARRON

Director, Provincial Dairy School, St-Hyacinthe

A GREETING FROM THE SOLDIER SETTLEMENT BOARD

By Mrs. Jean Muldrew, Director, Home Branch

Editor, *Journal of Agriculture*.

I have just received a copy of your paper and I want to congratulate you, at this the beginning of another year, on being able to put forth each month so creditable a work. For years I have watched your journal grow in attractiveness and usefulness and it is a matter for congratulation that you are able to send, each month, into the homes of your subscribers a paper which represents the best in Agriculture, in Home Economics, and in Community Welfare.

It is of personal interest to me because it finds its way into the homes of Soldier Settlers and will do some good work for the Home Branch of the Soldier Settlement Board in promoting better Home Making. That is the object of this Branch of the Board's work. We are trying to help the wives and families of our settlers to make good homes and thus give their full contribution to the success of the undertakings of the men.

The representatives of the Home Branch of the Board personally visit as many of our Soldier Settlers' homes as they can, not to supervise or inspect, but to befriend and encourage and to give advice, if it is asked, in the solving of difficulties.

As you know, we have many settlers who have no wives and some of these apply to us to assist in filling a long felt want. This is, alas, beyond the scope of the Home Branch.

Our work is being very gratefully received by our settlers and their wives, especially those who live in the sparsely settled areas of the great West. It is recognized as a new note in our national undertakings, this personal interest in the homes of those who settle upon the land. It has commended itself to thinking men and women throughout the Dominion and has elicited expressions of gratitude from many lonely women who have come from the Old Land and are now making Canada their new home.

JEAN MULDREW

Director, Home Branch Soldier Settlement Board.



Mrs. Jean Muldrew, Soldier Settlement Board, Ottawa.

THE CHEESE - MAKERS AND BUTTER-MAKERS

The manufacturer of dairy products is not required to look very far to locate the stumbling-blocks in his path. Usually his factory limits his horizon. Nevertheless he must sometimes glance a little beyond for he depends on the dairy farmer for his milk. Cost of production does not generally disturb his equanimity, but the quality of the milk he receives at the factory is a stumbling-block to his success. Lack of proper refrigerating facilities on the farm is a common cause of poor milk brought to the factory. The butter and cheese-maker must have noticed it during the past season, and he should make a point of interviewing every farmer who has furnished poor milk in order to induce him to make provision either for a sufficient quantity of ice or for a convenient water supply so that he may have his milk cooled at the farm before it is taken to the factory. *Good clean milk well cooled is necessary to produce first class butter or cheese.*

Many butter and cheese-makers upon reviewing their past season's experience may perhaps silently admit that the reason for the non-production of a first class article at all times must be sought nearer home. Poor equipment in the factory, poor rusty vats, porous or rotten wooden floors, and

MESSAGE FROM THE PRINCIPAL OF
MACDONALD COLLEGE

Editor, Journal of Agriculture:—

The beginning of a year is a time when we are apt to look backward at the immediate past and take notice of the progress of events in order to shape our way for the immediate future.

The most notable agricultural event in the year just past is the advent of the farmer into political power, and as we read the newspaper reports of the careers of the members of Ontario's New Cabinet, we note that the Premier and two of his colleagues are graduates of an Agricultural College. True, previous cabinets have had the portfolios of Agriculture entrusted to graduates of such institutions, but the direction of provincial affairs as a whole has never before been entrusted to the farmer.

A new era is, therefore, commencing for the agricultural community, and those entrusted with the education of the youth from the country must

consider if the type of education heretofore given is suitable for public life.

Our Agricultural Colleges have graduated men who were specialists in live stock, crops, soils, horticulture and dairying, have trained men as experts in plant and insect diseases, in agricultural engineering, in plant and animal chemistry, and in many other lines, and these men occupy to-day the leading positions in Technical Agriculture, and in their various lines are doing excellent work in teaching, research and administration.

But, the education that they have received largely deals with materials and things, and most of our present day problems, that a farmer's government will have to solve, are concerned with *persons* and not *things*. Therefore, it seems necessary for our Colleges to keep in touch with the progress of our people and meet the needs of the day. Courses must be arranged to allow for specialization not only in the material subjects mentioned, but in economic, legislative, social, co-operative and recreative lines as well. All subjects pertaining to leadership,

whether of the small community, the province or the state, must be studied and taught.

Leaders must be trained, but the teaching of democracy must also penetrate to our schools, and children must be given an insight into the institutions which control the life of every man, and must be made aware of the meaning and problems of their social organizations.

A larger field must also be taken by agricultural journalism. The few College men who have by inclination followed this career have dealt largely with material problems. More and more must they consider the human element and engage their activities in promoting and disseminating sound economic knowledge, and the meaning and problems of social organization.

Education must use the best of the past and build the best of the present on to that past. In this lies our certainty of future growth and progress.

F. C. HARRISON.

EDITORIAL

LOOKING FORWARD

He is a brave prophet who attempts to predict what will happen in 1920. The forces at work, visible and invisible, are so enormous that it is hardly possible for any finite understanding to estimate them fully and to gauge the final outcome.

We may safely assume, however, that the European War is over for the present. The nations are too much exhausted and the peoples have suffered so much that war is simply out of the question for some years at any rate. Germany may squirm under the severity of the Peace terms but she must submit to the inevitable. She has many hard years of recuperation ahead of her. That she will work hard and pay her debts there is no doubt, and out of it may arise, we trust, a new Germany purged of her haughty spirit of military domination of the world. Old feuds between nations will continue to cause much trouble for some years until the League of Nations takes an active part in their settlement. One of the first great events of the New Year will be the institution of the Court of the League of Nations and the gradual disarmament of the world.

We are not so sure of the final outcome of the great industrial and social unrest that has become more manifest since the war, neither are we sure how long the unrest will last, but we believe that the struggle will continue for a number of years. We believe, too, that when the struggle ends the relations between Capital and Labor will be greatly changed from those obtaining at the present time. Just what form these relations will assume it would be unsafe to predict, but undoubtedly the working-man will have more control of the machinery of labor and the output than he has at present. Moreover, he will have a larger voice in the government of the country. Let us hope, however, that the changes will come by evolution and not by revolution. We are fortunate in having as leaders of the movement men who are not revolutionary, a fact which augurs well for the safety of the country.

We also see in Canada a breaking-up of the old political parties, and a great upheaval in progress by a class that was formerly docile and easily manipulated by party leaders. During 1920 some interesting events are likely to occur, if we interpret correctly the signs of the times. The Farmer Movement is gaining momentum rapidly and may soon knock down some of the traditional structures erected by the two great political parties.

But the unrest is not confined to industrial and political matters; it also appears in social, religious and educational affairs. The old bottles are showing signs of cracking with the introduction of the new wine. It is safe to say, however, that whatever changes may be introduced will not become evident for some years, but they will undoubtedly be hastened by the changes occurring in the industrial system.

The war has awakened the great masses to the need of "scrapping" much of the old machinery that is unsuited for the requirements of the present day. In the words of General Smuts: "Humanity has struck its tents and is again on the march".

THE PASSING OF MR. ROBERT SELLAR

The recent death of Robert Sellar, the veteran editor of "The Gleaner" of Huntingdon, marks the departure from our midst of an estimable citizen and an able journalist and author. We had the honor of his acquaintance and friendship for nearly fifteen years, and we admired the sturdy Scotman for his fearlessness in giving expression to his convictions. His articles in the *Gleaner* on all matters relating to the welfare of the country were well written and exerted a wide influence far beyond the confines of his immediate locality.

His fearlessness made him many enemies but he never swerved from his convictions. He championed honesty in public life, and all measures that made for a better Canada.

He will be long remembered for his historical inquiries into early settlement conditions in his own part of the Province which have been published in book form.

Mr. Sellar had a kindly generous nature which made him highly respected and beloved in his own town where he lived so long.

The *Journal* will miss him, for he was ever ready to furnish information from his large store of knowledge of agricultural conditions in his district. We extend to his wife and family our sincerest sympathy in the great loss they have sustained.

ECONOMIC JUSTICE FOR THE FARMER

Rightly or wrongly, for many years farmers have felt that they have not been fairly dealt with in many matters of economic importance, such as market prices, the tariff, the borrowing of money, etc.

For this reason they have been organizing with the object of securing economic justice. In some instances they have met with failure, largely because the conduct of the movement has been left to agitators who were able neither to solve the difficult problems nor to administer the organization they created.

While we appreciate the farmer's position we believe that success can only be attained by adopting methods that have been tried out in other spheres of action. Such methods are neither simple nor easy of application. As in all great movements, four sets of persons must be utilized. First, the *farmers* themselves who must learn to cooperate for the common good; second, the *propagandists* or *educators*, whose duties are to educate the farmers as to the need for organization and to arouse them to the point of co-operative action; third, the *economists*, experts who are able to survey the whole field of the farmers' business, study the various factors and plan general policies to be followed; and fourth, the *administrators*, capable business men who can carry out the policies that have been outlined by the experts. Under such a method success will be sure and permanent.

The question will naturally arise: how is such a plan to be carried out since it will require both money and men? Under present conditions the government will hardly care to do it, for other and powerful forces will bring their influence to bear against it. The agricultural Colleges are not in a position to do much since most of them depend upon the government for support. The only available agency is an organization of farmers themselves. By concerted action it would be possible for the farmers to provide a fund for such a purpose, and to employ capable men for the different kinds of work to be done.

Such organizations are in existence in other industries, and they have been largely responsible for the development of these industries. In the West the United Grain Growers have prospered and are using their power to promote the interests of the farmers. In the United States the Farm Bureau Organization has recently been formed, has formulated its platform, and gives every indication of becoming a powerful factor in getting economic justice for the farmer.

At this period of renewed industrial expansion, when most industries are endeavoring to promote their own interests by every legitimate means, the agricultural industry will fare badly if it is not organized as efficiently as the others.

THE BREEDING OF LIVE STOCK

It is generally acknowledged that the British breeders are the best in the world. Not only have the majority of the main breeds of horses, cattle, sheep and swine originated in Britain but the best types of these breeds are to be found there. The question naturally comes to our mind: What are the factors that make for British leadership in the live stock world notwithstanding the large exportations of first class stock every year? The answer is that the British breeders do not part with their very best animals, and they are careful to keep the best females as well as the best males. Moreover, the art of breeding has been practised so long in Britain that the personal equation counts for much and that both breeders and herdsmen possess a mass of unwritten lore regarding the mating and care of animals, accumulated after repeated failures and successes, but practically unknown in other countries. These experts tell us that a breeder is born, not made. We should be inclined to discount the statement put in this form, for we believe that when the breeders of other countries get a similar thorough training for generations they will show like intuition in the art. It is not known as yet to what extent the climate and the vegetation have influenced British breeding, but probably these are negligible compared with the training of the breeders themselves.

At any rate, the work of these breeders is a splendid object-lesson for Canadians. Breeding is an art which requires keen intelligence, infinite care and long experience with animals. But as every art at its best is based on scientific principles, and the highest attainment of the art of breeding cannot be reached without a knowledge of the natural laws that underlie the best breeding methods, a knowledge of genetics would break down old erroneous ideas, suggest new methods and make for future progress.

There is no reason, therefore, why Canadian breeders equipped with both art and science cannot in time surpass the breeders of the old country.

TOO MUCH OVERHEAD AND TOO
LITTLE LIQUID CAPITAL

If we were asked to tell the chief reason why the average back-to-the-lander fails to make good on the farm we should say *too much overhead*. He gets out over his head too much, and he gets a lot of advice—far above his head, but we do not mean that entirely. By "overhead" we mean the expenses or charges just for carrying on the business before any start at earning is made. The tendency is to buy too expensive an equipment, put up great buildings, and then wait to have them filled. The outfit is too big for the job. There is too much dead capital in equipment—particularly in buildings and home surroundings. The back-to-the-lander often laughs at what he calls "those old-time farmers" and their equipment, but they make a living, and more, while the excess of dead capital in his own equipment may spread death all through his plans. The successful farmer gets the "overhead" down under foot. Next in importance as a cause of failure is a lack of liquid capital. The beginner seems to think that farming ought to run itself and also provide capital. The fact is there is greater need of purchasing capital in farming than in any business. Many back-to-the-landers tie up too much of their money in land and equipment, and have nothing left to work on. You have got to have money as well as muscle if you expect to work a farm right.—*Exchange*.

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NOTICE TO SUBSCRIBERS

Subscribers and members of agricultural societies, of farmers' clubs and of the Provincial Dairymen's Association, who do not regularly receive either the English or the French Journal of Agriculture and Horticulture are requested to address their complaints to the Secretaries of their respective Societies, who will transmit them to the Secretary of the Council of Agriculture at Quebec.

THE EDUCATIONAL CAMPAIGN

In the month of December the Protestant Committee of the Council of Public Instruction continued its educational campaign meetings at Scotstown, Ayer's Cliff, Richmond, Sutton, Waterloo, Clarenceville, Cowansville, Hemmingford, Shawville, Wakefield, Arundel and Buckingham. In the neighbourhood of Megantic County, meetings will be held at Christmas and New Year in Inverness, Leeds Village, Kinnear's Mills and Thetford Mines. Meetings in Montreal, Quebec, Three Rivers, Sherbrooke and Granby are planned for the New Year.

On the whole the meetings have been very successful. The Protestant Committee is not an elected body, but is partly nominated by the Government, the nominated members appointing or coopting six associate members. Thus the Protestant Committee resembles the Senate rather than the House of Commons. However, although it is not legally responsible to any other authority, it has a very great desire to keep in touch with public opinion. For this reason, it holds educational campaigns from time to time, the first one of which was held in 1906. It reports upon the work it has accomplished, discovers local problems and difficulties, and in general stirs up educational interest in rural counties.

The local problems are numerous and diversified. For example, in Scotstown, they require a new building to house the model school, and indeed, they ought really to raise the model school to the rank of a high school and put in enough scientific apparatus for the teaching of physics. In Ayer's Cliff, the problem is shortage of staff, there being only three teachers to conduct the whole of a high school course. The primary teacher is required to teach the first six grades in this high school. The principal teaches physics without any apparatus and naturally is greatly handicapped. Yet Ayer's Cliff sent three students last year to McGill University and one to Bishop's College. At Clarenceville the problem is one of honest valuation and local support to education. In Cowansville, the high school requires a new building. A site has been purchased by the school board, but there is hesitation in building a proper school to accommodate the children. The principle of consolidation requires to be explained in the neighbouring municipalities. Cowansville high school is used by local school boards for the education of their children without corresponding support. In Shawville, the difficulty is one of keeping the children at school, there being very few now who go into the high school grades. In the municipality of Clarendon, all the trained teachers of the fourteen schools left to go to the Western provinces last year. This municipality, which was one of the best staffed in the province, is now paying higher salaries for less qualified teachers, and in some cases for unqualified teachers. In Arundel, the problem is one of consolidation chiefly and of raising the model school to high school standing. At Buckingham, the community requires to give more local support to education and to pay higher salaries.

In view of all these problems, it can be seen that the meetings have taken a different shape in each community. However, there are some problems common to all, one of which is the serious shortage of teachers. As has already been mentioned, the Western provinces have enticed large numbers of our teachers to give up their positions in Quebec. A teacher who receives \$45 cannot be blamed for leaving and accepting a position at \$100. Similarly, teachers in model schools and academies can hardly be blamed for giving up their positions and taking more remunerative posts in the City of Montreal or neighbourhood. The principal of Scotstown model school is one of the most successful principals in the province, and has had six years' experience of teaching, and yet she only receives a salary of \$850 per annum, which is the same as the initial salary for an inexperienced teacher in Montreal. It is quite clear that she is not likely to stay in Scotstown much longer. Indeed, she would have left last year had she not been unwise enough to sign her contract too soon. Some weeks after being re-engaged, she was offered a position at \$1200 to begin with.

In Montreal there are 1500 more children in the protestant schools than there were last year. Even if each teacher had fifty children in her class, this means an addition of at least thirty teachers, to the staff of the city quite apart from any loss of staff through resignation. The shortage of teachers and the small salaries paid are perhaps cognate problems, each acting on the other. In some communities the smallness of the salaries paid to the teachers is a disgrace to civilization. That schools should be closed through lack of teachers is another blot upon our public spirit and our ideas of democracy.

This shortage of teachers is not confined to the Province of Quebec. A representative of Newfoundland was in Quebec in November and stated that 100 schools were closed on his island for lack of teachers. Prince Edward Island also has 100 schools closed. Nova Scotia is also hard put to it to secure

even untrained teachers. In our own Province of Quebec, we have schools closed in the Gaspé District, in the Eastern Townships and in the Ottawa Valley. We also have large numbers staffed by young girls from rural schools with no more education than they could get in Grade VIII themselves, without any professional training. The Western Provinces are always short of trained teachers, although they are rapidly overcoming this shortage by proper facilities for training, by compelling minimum salaries, and by paying higher salaries, much higher than the minimum. In the United States, 100,000 teaching positions are either vacant or filled by teachers below the standard. The attendance in normal schools is 20% below the average. Last year 22% of the teachers in the United States dropped out of the profession. In our protestant rural schools in Quebec, the autumn reports of our inspectors indicate an alarming increase in the number of "permissions" issued to boards on behalf of unqualified teachers and an alarming increase in the number of schools closed for lack of a teacher.

Perhaps some detailed information will be interesting in this connection. In Argenteuil County, there are about fifty-six rural schools. Of these about ten are closed for lack of teachers, viz, three in Gore, one in Mille Isles, one in Dunany, two in Chatham No. 1, one in Harrington No. 1 and two in Harrington No. 2. It seems absurd that in this comparatively wealthy county with so many high schools and model schools of the first class, there should be such a shortage of teachers in the rural schools. It is impossible to secure them from other counties. Most of the buildings are good, although the school at Mille Isles has a reputation for being unsatisfactory and uncomfortable.

In the neighbourhood of Clarenceville the salaries are disgracefully low. The people have raised their rate recently from six mills to eight mills, and they think they have been doing nicely. But the valuation is absurdly low. For example, one property which is worth \$18,000 is assessed on the valuation roll at \$1300. In other words, instead of being full value according to municipal code, it is only valued at 7% of its real value. A rate of eight mills therefore only means a rate of one mill. In spite of this low rate of local valuation, the salaries are almost the worst in the province. In the municipalities of St. George de Clarenceville, St. Thomas de Noyan and in the neighbourhood of Venice, there are eleven teachers with no training of any kind whatever, and the highest salary is \$240 a year and the lowest \$180 a year. In other words, a teacher with this salary gets fifty cents a day for the noble work of developing and training our future citizens and inspiring them with the highest ideals of character and citizenship; for training their minds and developing their morals and laying the foundations of culture. Fifty cents a day! This is about one-third of what they would have to pay for a charwoman to clean their houses. But even at fifty cents a day they are probably getting three times as good service as they are paying for. It is quite clear that we do not have to go out of our own province to civilize the heathen and to enlighten the people.

Owing to the small salaries offered, trained teachers are gradually disappearing from the rural districts and going to centres where they receive higher salaries and where they are better appreciated. In Argenteuil County, there is only one teacher with a model diploma in the rural schools and this is a diploma granted by the Central Board of Examiners about twenty years ago. In a district which extends from Ste. Therese to Point au Chene and from Point Fortune to Arundel—a district stretching sixty miles north and south—there are only six teachers with any professional training at all. About twenty teachers are just out of academies without any training whatever and the rest had a short course in the Lachute summer school. In addition, there are numerous schools closed for lack of any kind of teacher.

In this campaign we found great differences in the valuation and in the rate of tax levied. For instance at Buckingham, the valuation is \$172,000 and the assessment is about two-thirds of the full value. The rate of tax is twenty mills on the dollar or \$2.00 on the \$100. In Lachute with a valuation of about two-thirds of the real value likewise, the total valuation is \$446,280 and the rate is 12½ mills on the dollar. In Huntingdon the total valuation is \$718,056 and the rate is only seven mills on the dollar. Here is great need of some propaganda work in Huntingdon, because with such a high valuation for protestant property the rate is very low and the academy is falling into disrepute, being in charge of a teacher who, it is alleged, has only a second-class elementary diploma. The principal of Buckingham academy has no diploma at all. But the people of Buckingham are honestly trying to do their best. They have a small amount of protestant property and a high rate of 20 mills and they also charge fees. Unfortunately, the Pulp and Lumber company has fixed rates for a number of years, and even then the protestant schools only receive 13% of the entire company's tax, the French receiving 87%, because they have

over 800 children in their schools, whereas there are only slightly more than 130 children in the protestant schools. We found however, that the company would probably give some assistance if it was approached in the right spirit. One of the best meetings of the campaign was held at Buckingham as there was a large attendance, and a general interest manifested in the desire to have nothing but the best. The people there are anxious to abolish fees, to give every child a chance of a high school education, and to have trained teachers with good salaries. We left Buckingham feeling that the meeting had resulted in much real benefit to the schools. Indeed, we were asked to come back again in the near future even if we had to arrange a curling match for an excuse, so as to give further information and make other addresses on school matters.

At Arundel the problem is chiefly one of consolidation. There is one elementary school containing forty children no further than one mile away from the model school. It is true that the model school is situated high up on a hill and that transportation would involve going up this hill and down again by the present road, and the same on the trip home if consolidation were effected. However, a new road is partly built leading from Arundel to Harrington, and it is expected that the rest of this road in the direction of Lachute will be built soon. Instead of going up and down again, this road goes round the hill and will make a much more level route for transportation for the children of the neighbourhood to Arundel Model school. The district ought to combine at once and not wait for the road, and probably the road would come in the near future and would have its building hastened by consolidation of the school. But perhaps the road will have to be built first. In any case, the time is about ripe for consolidation in Arundel and also for raising the model school to high school standing.

This year, five of the pupils who would normally be in Arundel are in Lachute, and two more are in Montreal to receive their high school education. The feeling against consolidation has been very strong and two new elementary schools were built in order to block a movement to consolidate the schools, because the trustees thought that the people would never abandon two new elementary schools in order to have superior education and transportation to a higher type of school. However, at the end of the campaign meeting in Arundel, the school board remained behind and immediately raised their rate three mills on the dollar before our speakers left the hall. They also promised to tackle the question of consolidation in the near future. We left feeling that here was an immediate result which was very encouraging.

Consolidation has been found to improve the attendance wherever it is in force, and there is no fear of transportation injuring the health of the children. For example, two years ago at Lachute Academy, no fewer than eighty prizes for punctuality and regular attendance were awarded. Of these eighty prizes, about sixty were awarded to children who drove to school every day and were never late and never absent. They came chiefly from Brownsburg and Centerville.

On the whole, these campaign meetings have done much good. At Clarenceville, the municipalities of Clarenceville, St. George de Clarenceville and St. Thomas de Noyan promised to get together and see if they could work in harmony to improve their schools and effect consolidation. At Buckingham, the Protestant Committee was complimented for its public spirit in sending speakers and in advising them. They promised to raise the salaries, remove fees and obtain more support for the school. In Arundel they raised the rate three mills on the dollar and are to attempt the building of the new road and further consolidation. In the near future

the Arundel model schools should become a high school. At Scotstown they are looking forward to a new building and the raising of the model school to an academy. At Ayer's Cliff, they are expecting to add another teacher to the staff, and equip the school with apparatus for physics. At only one of the meetings with which the writer was connected was there any question raised, concerning the changing or the prices of text-books and most of the criticisms made were based on wrong information, and indeed in one case, on absolutely false information which could not be substantiated at all.

The speakers who have attended these meetings feel that an educational campaign of this sort should be held oftener than every two or three years and that some communities require more stirring than others. For example, in spite of the fact that a meeting was held at Ayer's Cliff, because of the backward districts in its neighbourhood, there were no representatives at all from Stanstead Township, which is one of the most stubborn and backward districts as regards education in the whole province of Quebec. It seems very difficult to get them to take a proper interest in their schools and to attend a meeting even when it is brought close to their doors. On the whole, however, meetings were very well attended and displayed a great deal of interest in the subject of education, most of the ratepayers believing that after the war they would need more education than every before and that we require a progressive policy both in financial support and to compel attendance at school to a higher age. The people are also realizing that \$50 a month is the minimum salary that can be offered for a rural teacher, and that probably it will soon be \$60 a month and that \$85 or \$90 a month is the smallest salary that can be offered to a teacher with a model diploma to be principal of a model school.

SINCLAIR LAIRD

DEPARTMENT ACTIVITIES AND OTHER ITEMS OF INTEREST

DAIRY SCHOOL, ST. HYACINTHE, QNE.

COURSE FOR 1919-1920.

English Course, and Course for Inspectors, Dec. 3rd-20th.
French Course for Expert Milk Testers and Butter and Cheesemakers.

First Course from Jan. 7th to 29th, 1920
Second Course from Feb. 3rd to 24th, 1920
Third Course from March 3rd to 26th, 1920

TERMS OF ADMISSION

All the courses are free. The only outlay the students are required to make is in connection with their living expenses during their stay in Ste-Hyacinthe.

The students when they enter the School should know at least the four simple rules of arithmetic. Any person, therefore, intending to attend the Schools should prepare himself by study at home or by taking private instruction from a teacher or other competent person in his parish.

Each course lasts three weeks. Students enter on Monday and the course begins on Tuesday at 8 o'clock, A. M.

CONVENTION OF INSPECTORS

This convention in which every inspector is expected to take part is very important. There will be outlined the plan of campaign of work for the improvement of the dairy industry in the Province of Quebec, and the Inspectors-general will give the instructions which are to be followed.

A. T. CHARRON,

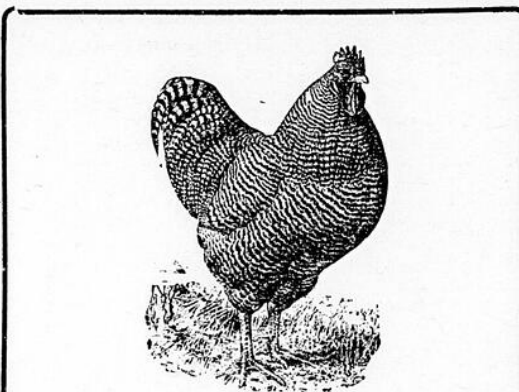
Director, Provincial Dairy School,

AGRICULTURAL INSTRUCTION IN THE PROVINCE

Convention of the 1st, 2nd and 3rd December, preparatory to the Agricultural Courses of a Week each of 1919-20

For the purpose of further perfecting agricultural instruction in the Province, the Honorable J. E. Caron, Minister of Agriculture has summoned a gathering of his professors to study together the special wants of each locality to be visited. This preparatory convention will be held on the 2nd, 3rd and 4th of December next in one of the halls of Parliament at Quebec under the direction of Mr. A. Desilets, B.S.A., director of the Short Courses of Agriculture and of Household Science.

Below will be found the itinerary which will be followed in December, January, February, and March next, in the region of the Eastern Townships and of Beauce. One course of a week will be given from the 16th to the 20th of December, inclusive, in the county of Montmorency, at Ste. Anne de Beauré. We cannot too much impress upon



BUY NOW

while they are cheap
and while you can
have a good choice,
your

YOUNG COCKERELS FOR RE-PRODUCTION.

Every year a large number of poultry raisers wait until April or May to procure the necessary sire for the breeding season. Such birds cannot always be found at that time; it is sometimes impossible to have them for love or money.

Buy today, not to-morrow.

Address the Villa Belvedere, Quebec (telephone 2573) for cockerels of the following breeds: Rhode Island, barred Plymouth Rock and White Leghorn, of good lines.

\$2.00 to \$5.00 according to age and line.

Once more, order now while you have a good choice, and before the colder weather, when shipments will be more difficult and dependent upon contingencies.

our farmers the importance of attending the lectures which will be given during these weeks of agricultural studies. The following is the itinerary and programme:

ITINERARY OF 1919-20.

LINE OF THE QUEBEC RAILWAY:

County of	Week of the
Ste. Anne de Beauré, Montmorency	16th to the 20th of Dec.

LINE OF THE GRAND TRUNK RAILWAY:

St. Romuald	Levis	13th to the 17th of Jan.
St. Flavien	Lotbinière	19th to the 24th of Jan.
Plessisville	Mégantic	26th to the 31st of Jan.
Warwick	Arthabaska	2nd to the 7th of Feb.
Asbestos	Richmond	9th to the 14th of Feb.
Compton	Compton	16th to the 21st of Feb.
Rock Forest	Sherbrooke	24th to the 28th of Feb.

LINE OF THE CANADIAN PACIFIC RAILWAY:

St. Guillaume	Yamaska	2nd to the 6th of Mar.
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LINE OF THE QUEBEC CENTRAL RAILWAY:

Weedon	Wolfe	9th to the 13th of Mar.
St. Georges	Beauce	16th to the 20th of Mar.
St. Marie	Beauce	23rd to the 27th of Mar.
St. Hénédine	Dorchester	30th March to 3rd April

PROFESSORS AND SUBJECTS TO BE TREATED

A. DESILETS, B.S.A., Director of the Courses.	Rural Economy, chemical and farm manure, drainage.
L. BROWN, Chief of demonstration fields.	Extensive farming and rural construction.
A. MATHIEU, B.S.A., Agricultural Instructor.	Cultivation of root crops, clover, Indian corn, meadows and pasture.
LOUIS BIBEAU, Dairy experimentalist.	Dairy Industry, duties of factory proprietor and of patrons.
J. B. TRUDEL, Superintendent of the Records of Dairy cows.	Records of Dairy cattle and organization of Recording centres.
Dr. J. B. M. GROTHE, M.V., Veterinary Surgeon.	Veterinary Medicine, hygiene, contagious diseases and current ailments.
G. VAILLANCOURT, Chief of the Apicultural and Sugar Service.	Practical apiculture, care of bees from both personal and commercial points of view.
RAOUL DUMAINE, A.A.D., of the Federal Service.	Practical aviculture, natural and artificial incubation, demonstration of killing and packing.
ETIENNE PARADIS, Horticulturist.	Kitchen garden cultivation both for the family and for market.
J. M. TALBOT, B.S.A., Inspector of Fruit Stations.	Cultivation of fruits, destructive diseases and insects, illustrated by lantern slides.
J. E. GRISE, B.S.A., Specialist on preserved foods.	Preserved foods, drying of fruits and vegetables, practical demonstration of preserving.
PH. RODRIGUE, of the federal service on breeding.	Breeding of sheep, organization of wool cooperatives.
L. THERRIEN, B.S.A., Special Officer.	Agricultural Cooperation.
G. BELBAULT,	Special horticulture, floriculture.

J. J. GAUTREAU, B.S.A., of the provincial Service of stock Breeding.	Raising of hogs, beef and horses.
Health Officers of Districts	Hygiene of food and of dwellings.
J. MORIN, Secretary of the Courses.	General Instruction.
Misses Eva Paré	Instruction in Household Science.
Misses Evelyn Leblanc	Instruction in Household Science.
" Blanche Lajoie	Instruction in Household Science.
" Estelle Leblanc	Instruction in Household Science.
" Alice Duval	Instruction in Household Science.
M. A. MORISSETTE,	Manager.

Each of these courses of lectures will be accompanied by practical demonstrations on the subject treated. At the evening sessions lantern slides will illustrate the instruction given in the course of the day.

Lectures will be delivered at two sittings each day; in the afternoon at two o'clock and in the evening at half past seven, every day from Monday till Friday night of each week. In the mornings the professors will be at the disposal of farmers and town residents and will be ready to visit their buildings, poultry houses, silos, vegetable and fruit store houses, wintering bee hives, winter gardens, etc., and also to give instructions at private houses.

On Thursday of each week a general meeting of the Farmers' Club will be held in the parish in which the course of lectures is given, and all questions of local interest will be discussed under the direction of the official agriculturist.

In those centres where it is difficult for farmers living at some distance to attend, either because of the weather, the roads or the distance, our lecturers will go to the neighbouring parishes to give two or three lectures on the subjects most useful to the region.

At this time when there is so much necessity for the rapid and full development of all the resources of the soil, it is hoped that our farmers will consider it a duty to take advantage of all these opportunities which are offered to them. We sincerely trust that the efforts of the provincial Government will be understood and duly appreciated by all the agricultural classes which are necessarily those chiefly interested in them.

THE FUTURE OF MOTOR FARMING.

Hon. Jos. Ed. Caron, Minister of Agriculture, has just signed a contract with The Cleveland Tractor Company of Canada, Ltd. of Windsor, Ont., by which the Dept. of Agriculture of the Province of Quebec becomes distributor of the Cletrac Tractor for the Province. This tractor already in use on many farms of the Province is undoubtedly one of the best suited for agricultural purposes in the Province and one that answers perfectly every farmer's needs.

The agreement between the Company and the Department allows the latter to sell Cletrac tractors on most advantageous terms which will be communicated on request.

The Department is now in a position to accept orders for immediate shipment. Everybody interested in the purchase of a tractor should apply for particulars.

SPECIFICATIONS IN BRIEF.

Motor: Four cylinder, 3 3/4 in. bore by 5 1/2 in. stroke. Protected overhead valves. Removable cylinder head.

Horsepower: 12 at draw-bar, 20 at belt-pulley.

Length: 96 in.

Width: 50 in.

Height: 52 in.

Weight: 3300 pounds.

Turning Circle: 12 ft.

Track: Length (each side) 50 in. Width 6 5/8 in.

Traction Surface: More than 600 square in.

Center to Center of Tracks: 38 in.

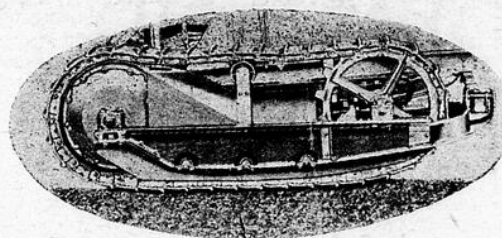
Clearance: 12 in.

Belt Pulley: Diameter 8 in., face 6 in.

Suspension: Three-point.

All the weight of the Cletrac is carried on 6 roller-bearing equipped wheels which run on two metal tracks. In the illustration part of the side frame is cut away to show the three wheels on one side, and the track has been laid out flat to show the surface on which these wheels run. The power is transmitted to the rear sprocket through the rear axle and the dust-and-dirt-proof internal gear. The rear sprockets engage the linked chain of track and drive the tractor forward on its own track. None of the weight of the tractor is carried upon either the front idler sprocket wheels or upon the rear sprocket drive wheels.

In offering the Cletrac at cost price, some may think that the Department is recommending motor farming on every farm. This may seem a rather hastily formed opinion.



The Cletrac travels on top of the soil and does not pack it.

We began by giving technical explanations and general information on the working of these machines, and we indicated the way of getting one. Let us now examine the importance of the Government's measure which not only offers these machines for sale but has already bought a few for demonstration purposes. First of all: Will motor farming be a success in our Province?

We must immediately answer: "Yes, certainly!" Progress already achieved by the use of other agricultural methods in the Province of Quebec is indeed noteworthy, and in the last twenty years or so we may say that nothing less than a revolution has happened. In days gone by, farming, and our own fathers are aware of it, did not rest on any basic principle nor on any determined set of laws. However small were the crops, the old folks were satisfied. Extremely fertile after it was cleared up, the ground lost little by little that wonderful fertility concerning which our fathers boast so much when talking about these times. Then was the agricultural problem really introduced, for the ultimate end of nearly all the agronomical sciences is precisely to find means of preserving and improving the fertility of the soil. The principal aim of rational farming is to see that the ground remains productive.

Becoming less and less fertile, the soil required renewed strength. This is why persons have gone to study methods of maintaining soil fertility in countries where farming is not only an art but also a money-making industry. The soil of these lands was not more fertile than ours, but since it had been tilled years and years and nevertheless yielded abundant harvests, people must have found means of maintaining its fertility. This result has been attained by mechanical processes and by rational manuring. Thanks to both, the soil has "carried on"!

Those of our farmers whose object is not confined to making both ends meet at the end of the year have followed this example. Twenty-five years ago, manure was thought to be of no use, it was a necessary evil. Some farmers, it is true, were spreading it on the ground but only around barns. Today having learned better, the farmers have become wiser. Many are unfortunately still ignoring its value; let us hope that they will learn some day.

This shows at least that something has been changed, that progress has been made on this point. Changes and progress in Agriculture are slow and often imperceptibly brought into effect. There is comfort; however, in remembering the old saying: Slow but sure, and that willing or unwilling everybody must some day adopt the changes.

Another branch of farming where radical changes have taken place is stock breeding. We regret that we are unable in so short a space to talk about the old methods. They seem ridiculous, and ridiculous they were indeed. There also progress has been achieved.

Not more than forty years ago an American built the first harvesting machine. Since then, what progress, what wonders have been achieved!

Each new invention was a surprise, many persons even laughed at some of them, other persons tried them, and while they gave at first but little satisfaction, a second inventor came, improved them and made them admirably adapted for the work to be done.

These considerations on mechanical progress lead us logically to speak about tractors and to ask again if mechanical farming will be a success in our Province. We answer: "Yes, it will, and before long for the following reasons: man-labor on the farm will always be expensive; farming is becoming more and more industrialized and work must be done more quickly and more easily. Tractors, like every machine, will be improved and will be less expensive when the demand becomes greater. Naturally their use will be profitable only on these farms where economical conditions are favorable: namely large area, large capital, nature and location of soil, kinds of products grown, technical ability of the farmer, etc., etc.

There seems no reason in the nature of things why the tractor will not soon become as common in practice as the binding machine, the hay fork, the loading machine, the corn binder, the manure-spreader, etc."

A WARNING TO FARMERS

We have warned our readers more than once against the numerous swindlers who periodically go through the country, selling building lots, situated on a mountain or in a swamp, or again peddling shares of no value in so-called companies which too often exist only on paper.

But warnings are quickly forgotten. Driven from one place the promoters of this doubtful business go further on to spread their nets, and numerous are the victims who each year find their hard-earned savings swallowed up.

These promoters usually offer large profits as bait; they promise dividends of from twenty-five to two hundred per cent to induce our farmers to buy shares in these doubtful enterprises. How many credulous farmers subscribe hundreds of dollars to the capital of companies of whose value and solvency they are totally ignorant, because they are offered fabulous profits, and refuse to subscribe a share of \$10. in a co-operative society which offers them many advantages, solid guarantees and a reasonable revenue of 6 to 8 per cent on their money.

It has become a regular epidemic. The peddling of shares in worthless companies constantly flourishes in some part of the province, to the detriment of simpletons who are plucked without mercy and who will never see their money again.

We have been told that, at the present time, the agents of a certain company who profess to be interested in the agricultural movement, and who falsely claim to be recommended by the Department of Agriculture, are scouring the country districts collecting subscriptions of a hundred dollars each, on the strength of promises made more than two years ago not one of which has yet been fulfilled.

Farmers, who are thus approached, would do well to make enquiries at the Department of Agriculture of Quebec before signing anything.

This department recommends certain co-operative societies such as that of the Cheesemakers of Quebec, the Seed Growers Co-operative Society, the Co-operative Society of the Valley of Yamaska, the Comptoir Co-operative, and other similar societies, organized under the laws of the department, controlled by it, and offering unquestionable advantages to farmers. But these societies must not be confused with other organizations which are neither co-operative nor commercial, except in name, and whose shares are of no value.

Distrust, on principle, all solicitors who travel thus from house to house, peddling shares. Take the trouble, also, to make enquiries before handing over money, or signing cheques for a stranger. Every week the Minister of Agriculture receives letters from farmers wanting to know the value of certain agricultural companies to which they have subscribed sums varying from one hundred to five hundred dollars. They do not think to make enquiries until after the harm is done. The notes have then been signed and discounted at some bank, and there is nothing more to do but to pay up and mourn for the stolen money.

Why not make enquiries before signing?

The honesty of our farmers makes them readily fall into the nets which are constantly being spread for them by these sharpers.

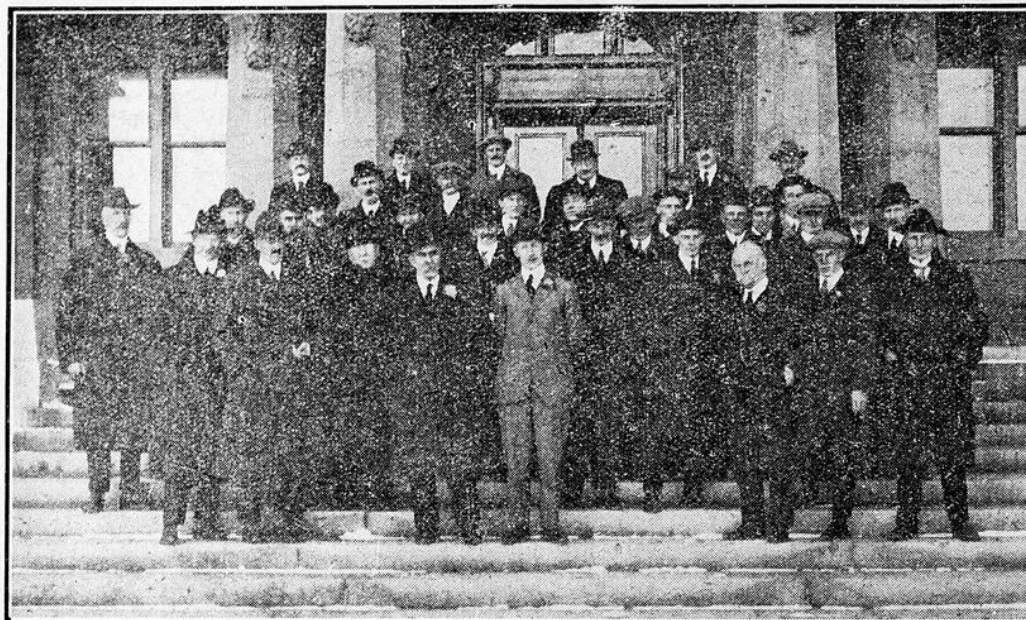
They must be protected and that is why we are again warning the public, since the interloping agents are operating in our country districts.

We also beg our confrères to notify their readers of this danger. Our Clergy could successfully avert this evil, if they would sound the note of warning. Our agricultural class have worked too hard to earn their money to be robbed of it like this, and we hope that all good citizens having any authority will do their best to help rid the country of these dealers in worthless shares which are being sold under false pretences.



Crushing and Levelling.

THE GARDEN AND ORCHARD



Delegates to the Annual Meeting of the Quebec Pomological Society, Dec. 3-4th.

ANNUAL MEETING OF THE POMOLOGICAL SOCIETY.

The annual winter meeting of the Pomological Society was held as usual at Macdonald College on Dec. 3rd and 4th. A large number of fruit growers and friends of the Society as well as students of the College were present. Among those present were: Mr. C. E. Petch, President, Mr. Peter Reid, Secretary, Dr. J. C. Chapais and J. H. Lavoie of Quebec; C. E. Slack, C. Fiske, Mr. Marshall, and J. Crossfield of Abbotsford; H. L. Thomas, L. V. Gadbois of Rougemont; I. Waddell, Hemmingford; H. Norton, Ayer's Cliff; Harold Jones, Maitland, Ont.; C. P. Newman, Lachine; R. Brodie and A. J. Dawes, Montreal; Prof. H. Walter, McGill; A. Raymond, R. Rousseau, G. P. Hitchcock, A. Johnson, J. Weber, W. H. Thompson, Morley Honey, P. Roy, W. O. Roy, W. T. Macoun, Dominion Horticulturist, and M. B. Davis, of the Experimental Farm; F. H. Grindley, Fruit Branch, L. S. McLaine, Entomological Branch, Ottawa; Rev. Father Leopold, Oka; Dr. F. C. Harrison, Professors Lochhead, Bunting and Dickson, and Messrs. Ricker, Tawse, Bryce, Walker and others, of Macdonald College.

The exhibition was larger and of better quality than usual and made a very effective display in the Assembly Hall. The box display of McIntosh and Fameuse was not as large as it should be, and it is to be regretted that more of the fruit growers are not adopting the box as a package for their No. 1 fruits. No difficulty was experienced in obtaining from \$3.50 to \$4.00 per box for all apples at the close of the exhibition. These prices figure out at \$12.00 to \$14.00 per barrel, and when it is considered that some growers sold their crop from \$3.50 to \$4.00 per barrel or less on the tree it is quite evident that greater efforts should be made to stimulate interest in the box package.

Among the prize winners were:—M. Honey of Abbotsford; A. Johnson, Sweetsburg; A. D. Verreault, Village des Aulnaies; P. Reid, Chateauguay; and J. Weber, Hudson Heights.

Mr. W. T. Macoun had a very fine display of some of his named and unnamed seedlings in 6 qt. baskets. Among these were some of particular merit as to quality, color and productiveness. Their hardiness is indicated when it is considered that they came through the winter of 1917-18 successfully. The Horticultural Department of Macdonald College displayed a fine exhibit of 60 boxes of McIntosh, and in addition the Biology Department had an exhibit of insects and diseases of the Orchard.

The president, Mr. Petch, in his opening address referred to the recent census figures of apple trees for the province which showed a loss of approximately 1,000,000 trees since 1911, or nearly one-half the bearing trees. This was largely due to the severe winter of 1917-18 but the cause went further back than this, and many orchards were dying out through old age and neglect. Unfortunately these orchards were not being replaced. Mr. Petch voiced an optimistic outlook for future plantings and he himself is setting out an extensive young orchard in the spring.

Dr. Harrison in extending a welcome to the Society on behalf of the College took an opportunity to point out some of the difficulties of the past

few years, and at the same time he thought that the fruit growers were not making the best of their opportunities. Co-operation in buying supplies would effect much economy, and he pointed out that in buying boxes some had paid 35 to 40c for boxes whereas a co-operative company in Ontario had secured theirs at 16c in shooks in carload lots. Quebec growers had an excellent home market at the best prices for high grade fruit, and he thought a large exhibition in Montreal would do much to stimulate interest in fruit growing for this province.

Prof. J. W. Crow of Guelph, Ont. was not able to be present, but sent a paper on "Plant Breeding" in which he dealt with the scientific aspects of breeding fruits and vegetables, and referred to their work at the Agricultural College in connection with developing desirable new strains and varieties of vegetables and strawberries.

Mr. L. S. McLaine of Ottawa dealt with Plant Importation and Exportation in relation to Canada and the United States. He pointed out that Plant Quarantine regulation 37, passed in the U. S. prohibited the importation of nearly all classes of nursery stock on account of the great danger of the entrance of dangerous insect pests or plant diseases. The annual losses from these injuries were very large, and in recent years new and dangerous pests had been introduced, among which were the European Corn Borer and the White Pine Blister Rust. Mr. McLaine pointed out that the inspection and fumigation of nursery stock imported into Canada was done for the protection of our interests, and that it was carried out in an efficient manner and with dispatch, and did not damage the stock. Delays in shipment or carelessness on the part of the nursery men was generally the cause of loss when it did occur.

Mr. B. T. Dickson, Assistant Professor of Biology at Macdonald College, spoke on the Black Currant

in relation to the White Pine Blister Rust. The seriousness of this disease was not over-estimated and for its proper control the eradication of one or other of the host plants was necessary. As the White Pine was the most important Lumber yet in Quebec and Ontario it was quite evident that the Black Currant should not be grown where White Pine is growing. The wind might carry the spores from the currants to the Pines for several miles.

Dr. J. C. Chapais gave an interesting paper on his "Conclusions from Thirty years of Apple Growing in Eastern Quebec". His experience from the long years of close touch with the industry was most important and his paper should be carefully read in the annual Report. Eastern Quebec had not suffered to the same extent as western Quebec during the winter of 1917-18.

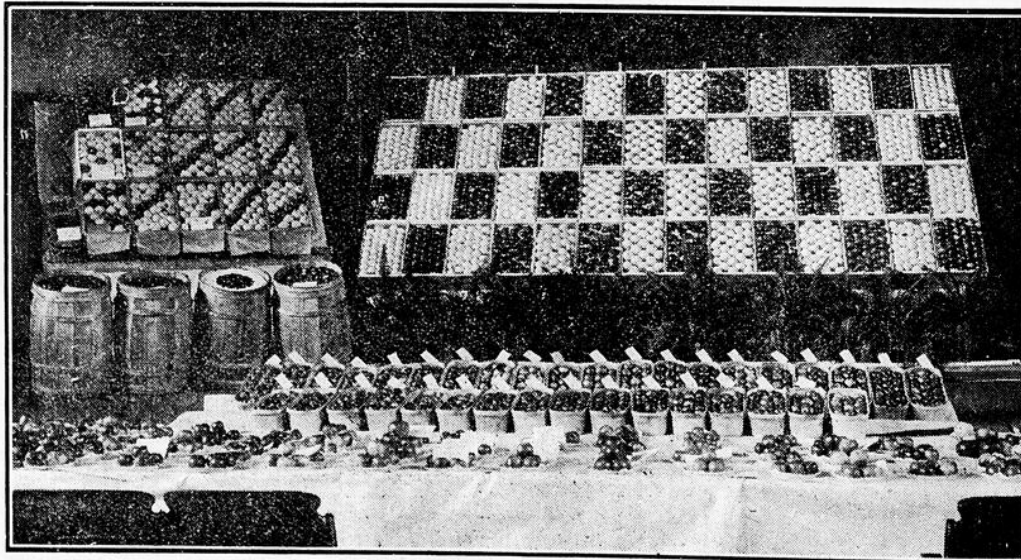
Prof. Bunting gave an address on "Our Experiences in Apple Growing at Macdonald College." He laid especial emphasis on cultivation and intercropping the young orchard, and as the trees reach a bearing age the tree rows may be allowed to go into sod while the centres of the rows should continue to be cultivated and a cover crop sown June 25th to July 1st. Other operations referred to as important in raising a good crop of apples were spraying, thinning of fruits of the varieties Transparent, Duchess, Wealthy, etc., careful handling and storage of the fruit as well as box packing. There can be no more profitable part of a farm than an apple orchard properly located as to soil and natural protection and well cared for, and a much larger number of young orchards should be planted in many localities in the province.

Dr. Edmund Mills of Syracuse, N.Y. gave a very interesting illustrated address on "Roses." Many of the pictures were in their natural color. Many of the scenes were from Dr. Mills' own garden at Syracuse, and here he was able to grow a large number of varieties including the hybrid perpetuals, hybrid teas and tea roses most successfully. He showed various methods of protecting the plants during the winter, among these methods was the use of leaves with boards over the top to shed the water and keep the leaves dry. Some of the illustrations were from the American Rose Societies' gardens at Cornell, Hartford, Conn., Washington and Portland, Ore.

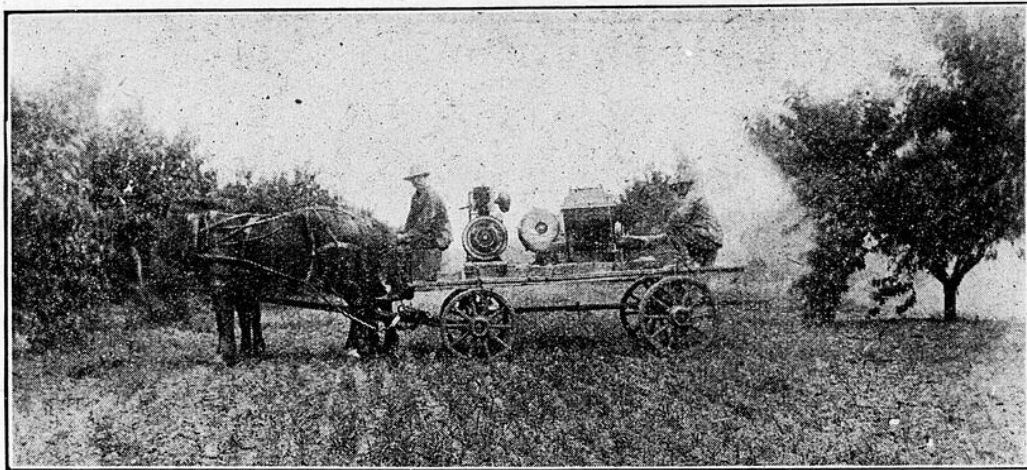
Mr. M. B. Davis of the Experimental Farm, Ottawa, gave an interesting paper on "Some new and not so well known varieties of fruits." Most of the varieties mentioned are the result of work at the Experimental Farm and have been under test long enough in various sections of the country to insure their merit in being grown with or in preference to our standard sorts. The varieties mentioned were:—

Strawberry, Portia.
Raspberry, Newman's No. 23.
Black Currant, Kerry.
Plums, Omaha, Waneta.
Apples, Dudley, Okabena.

Prof. W. T. Macoun gave a paper on "Commercial Varieties of Apples of Canada and the United States", which although somewhat long was most interesting and valuable. Varieties of apples were divided into groups according to their season of use. In each of these groups he gave a brief description of the varieties, the section in which they excelled, the quality, use, keeping and shipping



A Part of the Fruit Exhibit at the Annual Meeting of the Pomological Society at Macdonald College, Dec. 3-4th.



SPRAYING WITH THE DUST SPRAYER.

qualities, beside the characteristics of the tree or fruit which made it valuable or unpopular to the trade. It is surprising what a few high quality apples can be grown in Canada at the present time, but with the results of Mr. Macoun's work beginning to show itself, as shown by the exhibit of his own originated varieties, a few years hence should add many varieties of value to our present list.

The Rev. Father Leopold presented a paper on "Dusting," the result of an experiment carried on the past season in the Wealthy orchard at La Trappe, P. Que. Bordeaux dust, lime sulphur dust, and liquid lime-sulphur were compared as fungicides. Acknowledging that the liquid spray will always be used as a dormant spray, he found the use of lime-sulphur, either liquid or dust, preferable to bordeaux dust as a summer spray. Arsenate of lime, beside being much cheaper than arsenate of lead, gave equal if not more satisfactory results as an insecticide.

On account of illness Mr. Baxter Dominion Fruit Commissioner, of Ottawa, was prevented from attending the meetings and speaking on "Orchard Conditions, Past, Present and Future." His paper was read by Mr. Fred Grindley of the Fruit Division, Ottawa, who is well known to the members of the society. The paper gave the status of the industry before the war; the result of the embargo on fruit during the war; the influence of the winter of 1917-18 on fruit trees, and the bright prospects of the future, more especially since high prices prevail and more attention is being given marketing conditions, besides the resumption of the overseas export trade.

The election of officers resulted as follows: — Mr. C. E. Patch, Hemmingford, re-elected President, Vice-Pres. J. H. Lavoie, Quebec; Sec.-Treas. Peter Reid, Chateauguay Basin, and the following directors: Indell Waddell, Hemmingford; J. R. Marshall, Abbotsford, G. P. Hitchcock, Massawippi; I. A. Raymond, Plessisville; J. M. Talbot, Quebec; A. D. Verreault, Village des Aulnaies; Rev. Father Leopold, La Trappe; and N. E. Jack, Chateauguay Basin.

SHORT COURSE IN HORTICULTURE

A four days Short Course in Fruit and Vegetable Gardening will be given at Macdonald College on February 3-4-5-6. This course is arranged for the benefit of the practical grower as well as the amateur, and the subject is dealt with not alone from the lecture standpoint, but by demonstration in the classroom and greenhouses, and by the use of lantern slides.

The up-to-date fruit grower or market grower should be abreast of the times in regard to the best cultural methods, control of insect pests and plant diseases, marketing problems, and proper choice of varieties. Competition is keen, and one can only be most successful by adopting the best practices.

The course is intended to benefit the experienced grower and at the same time instruct the beginner in a way that can be easily followed. An opportunity is given to get intimately acquainted and in touch with the various departments of the college, and the few days of the course should prove very profitable to those vitally interested in fruit or vegetables.

An opportunity will be afforded for those desiring it to gain some experience in Floriculture during the course.

Accommodation can be secured at reasonable rates in the village, or it will be possible to come out from Montreal each day in time for the lectures and return early in the evening. If one cannot remain the four days one may come for one or more days.

The following is an outline of the course for each day:—

- TUESDAY, Feb. 3rd.**
 - 10.00 a.m. Opening Session.
 - 10.30 a.m. Prospects for Fruit Growing and Vegetable Gardening in Quebec.
 - 11.00 a.m. Soils and Fertilizers.
 - 1.30 p.m. The Planting and Sowing of Seeds.
 - 2.30 p.m. Selection of Varieties of Vegetables, Fruits and Ornamental Plants.
 - 3.30 p.m. Plans for the Vegetable Garden.
 - 7.30 p.m. Gardening — Illustrated.
- WEDNESDAY, Feb. 4th.**
 - 9.00 a.m. Hot Beds and Cold Frames.
 - 10.00 a.m. Potato Culture.
 - 11.00 a.m. Tomato Culture.
 - 11.30 a.m. Vegetable Culture.
 - 1.30 p.m. Vegetable Culture.
 - 2.30 p.m. Storage of Vegetables and Fruits.
 - 3.15 p.m. Canning Demonstration or Bee Demonstrating.
 - 7.30 p.m. Improving the Home Surroundings.
- THURSDAY, Feb. 5th.**
 - 9.00 a.m. The Planting and Management of a young Apple Orchard.
 - 10.00 a.m. Intercropping the young Orchard.
 - 11.00 a.m. Management of a Bearing Apple Orchard.
 - 1.30 p.m. Pruning Demonstration and Top Grafting of the Apple.
 - 3.00 p.m. Insects and Fungus Diseases and their control.
 - 7.30 p.m. Insects and Fungus Diseases.—Illustrated.
- FRIDAY, Feb. 6th.**
 - 9.00 a.m. Strawberry Culture.
 - 10.00 a.m. Bush Fruits.
 - 11.00 a.m. Plum, Cherry and Pear Culture.
 - 1.30 p.m. Spraying the Garden and Orchard.
 - 3.00 p.m. Question Box, or Demonstrations on Bee Culture or Poultry for those desiring it.

For further particulars apply to the Principal, Macdonald College, P. Que.

FREEZING INJURY TO POTATOES

By R. E. Vaughn and M. Miller of the Wisconsin Experiment Station

Freezing causes heavy losses annually to potato growers and dealers. Frost injuries may occur in the field before or during the harvest period, at any stage in transportation and marketing or later in storage. In certain years of severe early frosts losses may, indeed, be heavier from freezing than from any of the common potato diseases.

Three district types of injury occur during "cold snaps", all of which are very common.

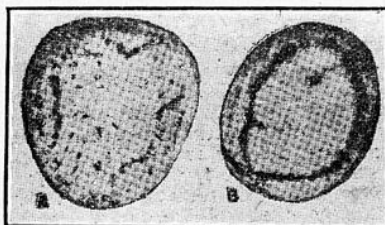
FREEZING SOLID

If potatoes are actually frozen solid clear through or on one side they become soft and mushy when thawed and are easily detected and sorted out in storage lots.

Freezing is often limited to one side of the potato which may have projected above the soil or may have been in contact with a cold wall.

TURNING SWEET

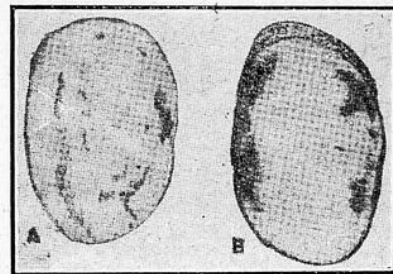
Tubers stored at low temperatures, twenty-nine to thirty-four degrees F., for a month or more, "turn sweet." This turning sweet is popularly termed "chilling" and is supposed to be due to slight freezing injury. This is incorrect. It is due to prolonged low temperatures but not to ice formation in the tissues and hence is not a sign of freezing injury. Potatoes which have been slightly frozen do not necessarily turn sweet, and on the other hand, potatoes may be sweet because of prolonged cold storage without having been frozen or "frost-bitten" at all.



Cross Sections of Tubers Damaged by Internal Freezing.

INTERNAL FREEZING INJURY OR FROST NECROSIS

If potato tubers are exposed to the severe frosts (temperatures below twenty-eight degrees F.) for a short time many of them will, upon cutting, show dark discolorations in the interior flesh. These internal symptoms of freezing injury vary considerably in appearance but they have certain characteristics in common. They are generally most



Blotches Caused by Exposing to Temperatures Below 28 Degrees F.

marked at the stem end of the tuber and in cases of slight injury are limited to this. They cannot, as a rule, be detected by the external appearance of the tuber although upon storage such injured tubers will more than normal ones.

The discolorations most commonly appear as dark blotches scattered irregularly through the flesh, especially in the outer flesh. Very often, however, fine lines combine to make a netted or ring pattern. Sometimes these may be mistaken for certain tuber diseases unless the possibility of frost is understood.

Generally during mild exposure certain tubers succumb while others nearby under like conditions are unharmed, an indication that certain tubers are more susceptible to frost injury than are others.

INFLUENCE OF FREEZING INJURY ON SEED

Do not plant potatoes which show freezing injuries. They may grow because the sprouts are more resistant than the body of the tuber and therefore mild injury may not kill the eyes. Seed tubers which have been frosted usually sprout more slowly, however, and are liable to rot before the plants are well established on their own roots.

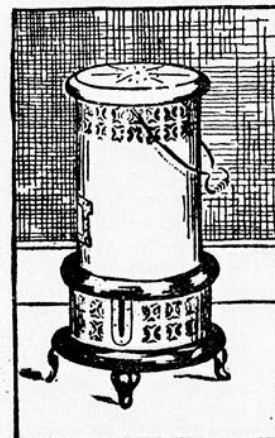


Water Modifies the Temperature of the Room.

CAN CONTROL FREEZING INJURIES

Watch the temperature of your storage room in winter. A simple way to do this is to have a tub of water near the potatoes. Water begins to freeze at about thirty-two degrees F., and potatoes at about twenty-eight degrees F. Ice formation in the water, therefore, serves to give timely warning of impending danger to the potatoes and at the same time, if there is sufficient bulk of water, it will, in freezing, actually release heat, which retards the fall of air temperature. Actual freezing does not begin in potatoes until the temperature drops to some point below twenty-eight degrees F.

If potatoes are shipped during cold weather in a heated car, provide for circulation of air from the stove to all parts of the car. This will prevent black heart in potatoes near the stove and frost injury in those in the outer parts of the car.



Often a Little Heat will Save the Tubers.

"THE CURRANT IN RELATION TO THE WHITE PINE BLISTER RUST"

(Synopsis of address given at the Pomological Society Meeting Dec. 3, 1919).

INTRODUCTION.

During the last ten years or so the White Pine Blister Rust has become by far the most serious fungous pest of white pine in Canada and the United States of America. It is a fungus which requires to live on two different host plants in order to complete its life history. These two host plants are the White Pine and either Currant or Gooseberry, but especially the former.

HISTORY.

The fungus (*Cronartium ribicola* Fischer) was first discovered in Russia in 1855, and it has since been found in every European country. It has long been the custom in Europe to practise reforestation, consequently many nurseries specialize in growing forest tree seedlings. White Pine is one of the most valuable of forest trees, hence it is extensively grown. In this country and in the United States, until recently, all the seedlings of White Pine were imported from Europe, principally from France and Germany. As a result, the fungus has been introduced into American along with the seedlings, and is now a source of grave danger to the White Pine in Kansas, New York, Vermont, New Hampshire, and other states and also in Ontario. It is certain to be found in Quebec. Stewart, at Geneva, N. Y., in 1906, discovered the first outbreak in America. Since that time the disease has been found practically everywhere the White Pine and Currant grow.

ECONOMIC IMPORTANCE

(a) On the Currant.

The fungus arises from spores, blown or carried from diseased pines, which germinate and grow into the tissues of the leaves of Currant or Gooseberry. In them the disease shows itself in patches from 1/16 to 3/8 of an inch across. Frequently there are so many diseased areas that the whole leaf is involved. As a result of this, defoliation occurs earlier than usual. The leaves have not been able to manufacture as much food both through being diseased and from early falling, and there is a consequent lowering of the vitality of the plant. If this occurs year after year, as it usually does, the depreciation in vitality seriously affects the resulting crops.

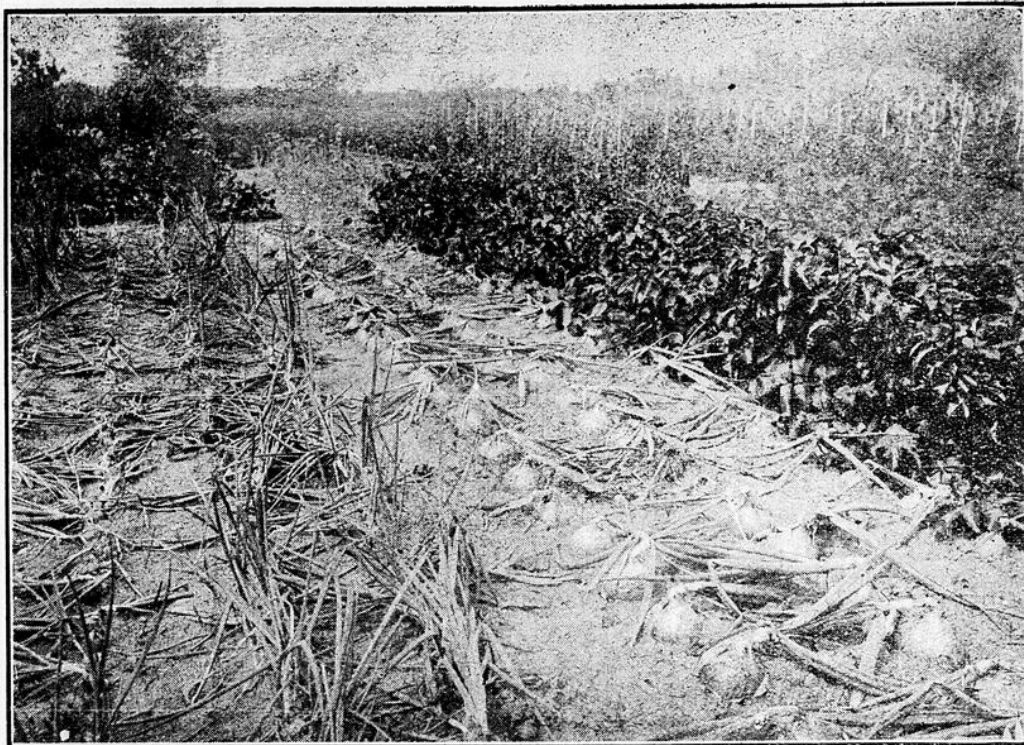
(b) On the White Pine.

The real damage, however, is done on the five-leaf pines, especially the white pine. In the pine, infection occurs in the bark and the fungus lives in the green bark of the tree. It may live and grow there for two or three years and completely girdle the tree or branch. In that case, of course, the death of the tree or branch is certain. It seems unable to infect bark over twenty years old, but by infecting the younger branches it will, in time, kill a tree much older. Trees of 100 years have thus been killed by the gradual death of the younger branches. In England it is now almost impossible to grow the white pine because of the prevalence of the Blister Rust. It is serious all over Europe and even during the war the Germans were so impressed with the importance of the disease that they carried on inspection and eradication work. I have no figures available as to the total value of the white pine stands of Canada, but it is obvious that it runs into millions of dollars. Unless efforts are made to control the Blister Rust this valuable tree is so far doomed that it would be impossible economically to grow it.

LIFE HISTORY OF THE FUNGUS.

Beginning with the Currant there is first an infection of the leaves by spores from the fungus on the white pine. Infection usually occurs on the lower surface and entrance to the leaf tissues is gained through a stomate. The mycelium or mass of threads grows, and in from ten to twenty days later begins to develop summer spores known as *uredospores*. These break through the epidermis and, when blown or carried to other leaves, they may germinate and give rise to a new infection. Later in the season the same mycelium gives rise to spores known as *teleutospores*. The teleutospores cannot cause an infection of the Currant. They do, however, germinate whilst still on the Currant leaf and they produce smaller spores known as *sporidia*. The sporidia are blown about when mature and some alight on the young bark of white pines where they germinate and cause the pine infection.

In the pine mycelium grows slowly through the tissues of the green bark, which is usually replete with stored food or food being translocated to the storage on growing parts. Here it usually grows for at least two years, probably three, and possibly four. Eventually the mycelium begins to develop spores about April. Meantime the bark has become three or four times as thick as normal bark, owing to the stimulative effect of the fungus. It is also



A garden showing the method of growing Exhibition onions. The larger onions on the right averaged about 2½ lbs.

definitely etiolated showing a reduction in vitality. The first spores (*pycniospores*) are non-functional, but about May or June other spores (*aeciospores*) develop in fruiting bodies known as aecia, which break through the bark. The aeciospores cannot re-infect the pine; they can only germinate and grow on a Currant or Gooseberry. On the latter plants they germinate and cause the rust on Currant or Gooseberry completing the life cycle.

After having once developed aeciospores on the pine the process is renewed annually so long as the mycelium and the diseased trunk or branch lives.

Thus each year white pines and other five-leaf pines spread the rust to Currants and Gooseberry and they, in turn, cause new infections of the pines.

CONTROL.

1. Burn all fallen leaves of Currant and Gooseberry.
2. Spray plants with Bordeaux, especially the lower leaf surface.
3. Look for a diseased pine in the vicinity and get it destroyed. Spores are known to be carried by wind at least half a mile. Insects may carry them greater distances, but in all probability the windborne spores are the usual means of infection.
4. Wild Currants and Gooseberries are regular hosts as well as cultivated varieties. Therefore, any wild varieties, growing near pines having five leaves in the fascicle, should be destroyed.

B. T. DICKSON

Macdonald College

GROWING ONIONS FOR EXHIBITION.

At most of the exhibitions onions form one of the principal attractions, due to the exceptionally large specimens shown by exhibitors. This enthusiasm is due to the improvement of varieties made in last few years, and to improved methods of cultivation. Cranstons, Excelsior, Denice and Prizetaker, are considered the best varieties for exhibition, also Red Globe.

One advantage of growing onions is, that they can be grown on the same ground for a number of years, because this crop is not subject to disease like most others. However, any good soil will grow onions, but the best is a good loam. Sandy soil can be improved by an extra heavy application of good manure. In any case the ground should have a good dressing of decayed farmyard manure, also all the burnt garden refuse should be spread over the surface. If possible the ground should be plowed or dug in the fall, five or six inches deep, to allow the frost to liberate plant food. By doing this moisture will also be conserved.

PLANTING.

Seeds should be sown as early in the Spring as possible. Intending exhibitors who have a greenhouse at their disposal should sow the seed in February in boxes about three inches deep, and of any convenient length and width. A good mixture of soil consists of three parts of good loam, and one part of well decayed manure with a little sand added to keep the soil open. Fill the boxes to within an inch of the top, and pack the soil firmly, sowing the seeds evenly over the surface about

half an inch apart, cover with sifted soil, and again press the soil firmly with a flat piece of wood, giving a thorough watering. Next place the box in the greenhouse with a temperature of 55 to 60 F. and cover it with a piece of glass. Directly the seedlings appear remove the glass and expose them to all the light possible. When the seedlings are one or two inches high, transplant them into other boxes or pots mixing about one pint of bone-meal with one bushel of soil. If boxes are used the young seedlings should be planted about three inches apart each way. Be careful not to damage the roots, and leave as much earth on them as possible. Press each plant firmly, and give it a good watering, then place as near the glass as possible. If pots are used, the 2½" to 3½" size is large enough. The same treatment is used as for those grown in boxes. Every person is not fortunate enough to own a greenhouse, so the next best thing is a hot bed. In this case, the seeds cannot be sown before the middle of March or later, depending on the locality. They can be grown in boxes as mentioned above, or the seeds can be sown directly in the hot bed in rows about three inches apart, and scattered very thinly in the row; give a thorough watering and admit a little air on all favorable occasions. After the seedlings are up, thin out all the weak plants leaving the strong ones about two inches apart. Remove the lights entirely whenever the weather is suitable. Onion seed can also be sown in the same manner in the home, especially if a good bay window is available. Give all the light possible and gradually harden them off before planting them outside.

The time to transplant into the open ground depends on the locality, but generally speaking this will be about the first week in May. This work should be manipulated very carefully, and the plants lifted out of the box with a garden trowel, retaining as much earth on the roots as possible, so that they are not disturbed. They should be planted about eighteen inches apart between the rows, and twelve inches in the row. This distance should give them lots of space to develop. If the soil is dry give a good watering, then cultivate with a good hoe. During the growing season give frequent light dressings of a reliable vegetable manure. One of the best mixtures is composed of wood ashes bone-meal and a little nitrate of soda. The later should not be used after the first of July. Farm yard liquid manure can also be used at intervals until the end of July. Never allow the bed to dry out; otherwise the growth will be retarded. About the middle of August, or two or three weeks before the exhibition, the tops should be laid down and the bulbs partly lifted. As soon as they appear to be ripe, lift them, leaving them the sun to finish ripening. Remember that a well finished onion will have the preference over green specimens. Be careful not to remove any of the outer skin, but keep them as natural as possible. Points considered by most judges are uniformity, good shape, and maturity.

E. W. JONES

It is only a very narrow-minded man who because you do not always agree with him brands you as a "kicker".

THE FARM AND FARM CROPS

OUR PROVINCIAL DISTRICT REPRESENTATIVES

The District Representative movement, while a new one, is spreading rapidly over the whole continent.

Under the name of country agents, there are in the United States nearly 1200.

Almost every country in Ontario has one representative, and some of them have two, and all of the other provinces have made a start in this very desirable method of bettering farm conditions.

The first three District Representatives were appointed in Quebec by Hon. J. E. Caron in 1913. There are now 33 representatives throughout the province. (It may be stated here as a matter of history that Macdonald College appointed a District Demonstrator in 1912, three in 1913, six in 1914, eight in 1915, one in 1916, and one in 1917. In 1916 the Minister took over all the Macdonald Demonstrators as District Representatives with the exception of one, and he was taken over in 1918. *Editor.*)

The government of Canada, the Agricultural Colleges, and other agencies have spent a large amount of money in experimental work. Remarkable results in many cases have been obtained, but while the agricultural press, the farm bulletins, the institute lecturer and various other agencies have done and are doing good work in circulating these results, the fact yet remains that the most improved methods are not being followed by the farmers in general, and that if results of a lasting nature are to be obtained, it is necessary to co-operate with the farmer in having actual tests and demonstrations which have been found effective on the demonstration farms and elsewhere carried out on his own farm.

Again, in every neighbourhood are to be found farmers who have discovered methods of their own that are effective in that particular district, but are not generally known.

This is where the District Representative proves his usefulness.

Having a good practical experience on the farm and a thorough scientific education, he is quick to see the advantages of, and reason for, certain methods of farming. He places before all the farmers of his district not only the best practices of the Experimental Farms, but of the successful farmers of the province as well.

Briefly, the District Representative is a man who stands ready to co-operate with the farmers of his district in:—

- 1) Finding a market for a pure seed, — wheat, oats, barley, flax, rye, potatoes, etc.
- 2) Putting the farmer who wishes to buy pure-bred animals in touch with the man who has them to sell.
- 3) Supplying plans and specifications for poultry houses, barns, silos, etc.
- 4) Organizing dairy improvement associations.
- 5) Arranging series of meetings at which the farmers will discuss the problems of their district, and exchange ideas on the best methods to follow in solving their own problems.
- 6) Trying out cultural methods found successful elsewhere on local farms.
- 7) Organizing egg circles, poultry fattening stations, and securing a market for the finished product.
- 8) Organizing boys' and girls' clubs and giving the public school teachers such assistance as will enable them to make this new phase of educational effort a success.
- 9) Giving demonstrations in combatting the insect and animal pests that trouble the district.
- 10) Organizing auto tours whereby the methods being followed by the progressive farmers of the district will be inspected by other progressive farmers, and reasons given why the methods being followed were producing good results.
- 11) Encouraging the construction of good roads.
- 12) Conducting short courses in gas engines, poultry raising, dairying, horticulture, field crops, live stock, and home economics.
- 13) Consolidating the numerous independent agencies in his district into a compact community organization with its object. — The greatest good for the greatest number.
- 14) Organizing drainage districts.
- 15) Standardizing the products of the district.
- 16) Securing information from experimental farms, agricultural colleges, and other provinces and states that is of interest to the district.
- 17) Securing help from agencies already in existence which will lead to better schools, better churches, more recreation, improved sanitation and other enterprises of service to the community.
- 18) Finding out why certain methods are successful under certain conditions and on certain farms, and are a failure on others.

19) Stimulating interest in shipping associations, purchasing associations, etc., by keeping farmers informed as to prevailing prices, visible supplies, etc.

The position of District Representative is one of the hardest to fill in the work of the Department of Agriculture, demanding as it does men with several years' practical farm experience, in addition to a full college course in Agriculture. It requires men of large calibre, broad vision and supreme optimism.

The District Representative is the clearing house for information on all phases of agricultural work. If he does not happen to have the information asked for, he knows where to get it and gets it as soon as possible.

In order to fill the position of district representatives the applicant must have followed a full course in agriculture and have obtained the diploma of a Bachelor of Agricultural Science (B.S.A.) from an authorized institution. It is also necessary that he serve for a period as assistant representative, during which time his knowledge of agriculture and his fitness to fill the position of official representative may be put to the test. If he shows an aptitude for this work he is deemed worthy to occupy the position of official representative when the Honourable Minister decides to open a new district.

CHS. A. FONTAINE, B.S.A.

District Representative for Deux-Montagnes County.

THE DEPOPULATION OF THE COUNTRY

The government of Ontario has just published some heartbreaking statistics on the depopulation of the country districts within its territory.

Since 1900 these districts have lost to the towns some 267,000 of their inhabitants. Thirty-two counties have suffered a considerable diminution. Five have lost more than ten thousand souls, and eleven others have each lost more than four thousand inhabitants. The remaining counties have had losses of from four hundred to four thousand persons. At this rate the rural population of Ontario will soon be less than that of Quebec. It only exceeds it now by a few thousands. The urban population, on the contrary, has been considerably augmented everywhere. It now exceeds, to a large extent, the population of the country parts.

Ontario is evidently suffering from a grave misfortune and our neighbour has a problem to deal with, which is as alarming as it will be difficult to solve.

How are we to explain this general desertion of the country in one of the most favoured parts of Canada with respect to climate and fertility of the soil? There are many causes no doubt, but the principal reasons for the abandonment of the land by our farmers, are, the scarcity of farm help, and the particularly advantageous situation of the working classes in towns, because of the high salaries paid and the short hours of labour demanded.

This state of things foreshadows a serious danger for the future. Ontario is on the verge of a disastrous upheaval which will be difficult to avoid. Agriculture must be encouraged in every possible way. A larger share of the public funds should be spent to improve the lot of the farmers. It will be necessary to make life in the country more attractive and more lucrative than city life by offering various advantages and generous encouragement to agriculture.

This is the first and most important question which claims the attention of the new farmers' government, and the Ontario administrators will have to work hard to remedy this grave state of affairs.

Our province is less affected in this respect than Ontario. Our rural population still exceeds that of our urban centres, but we too are feeling the effect of the great unrest which is affecting the whole Dominion. The difference lies in the fact that we have been able to better resist this evil, but the danger is not yet averted.

The attractions of the towns with their amusements, the high salaries and short working hours, are a constant danger which we must provide against more and more.

The Government has for many years past made agriculture and colonization the most important part of its programme. It intends to further extend its agricultural policy. This is a very wise decision.

Agricultural production is the basis of the progress and advancement of a country. Quebec is now ahead of the whole Dominion in this movement. Our province leads the way in agriculture; our farmers know that they may trust her fully to promote their interests and to better their condition.

NORTH WESTERN DENT CORN

The variety of corn known as North Western Dent is not in any sense of the word a new one. Some time ago we recognized that it was a promising variety for Quebec, and placed it in our variety test block along with many of the better known ensilage sorts. Hitherto it has been grown chiefly throughout the Canadian West, principally in Manitoba, but also in the Northern States just across the border.

Five years experience with this variety has shown it to possess very desirable characteristics for certain parts of the East as a substitute for many of the later maturing sorts now only too commonly grown.

As the name implies this variety is a dent corn, and as such is quite the earliest of any of the dent varieties we have thus far tested. In fact it is much earlier than any of the flint sorts commonly grown for ensilage purposes. In an average year we have no difficulty in maturing the crop for seed and even in a poor year it invariably gets sufficiently far advanced to make good ensilage. During this past summer (1919) which was a fair corn year, we grew a half acre block of this variety that matured perfectly and gave us a yield of 98.5 bush. of dry corn to the acre—the shrinkage, due to moisture, from the time it was harvested till dry was about 35%.

With such an early maturing sort one cannot expect to get a very high yield of fodder at the same time—the two factors are more or less antagonistic. As an average of five years North Western Dent has given us a yield of somewhat over twelve tons of green fodder per acre. Of this yield over three tons were made up of ears, which has a very important influence on the quality of the ensilage.

It was the writer's experience this year to judge ensilage corn which had been entered in the Standing Crops Competition in various parts of the Province. In only a very few instances was it found that a variety was chosen that was adapted to the locality in which it was grown. The tendency in all corn growing seems to be to select a variety which is too late but which may do fairly well in an exceptionally good year. In other words the aim is to get tonnage with very little attention to quality. While the ordinary sorts such as Bailey, Leaming, Wis. 7 and Red Cob may be alright in some localities it is becoming more evident all the time that they are too late for the section known as the Eastern Townships. In that section there is a much shorter cooler season—factors which work directly against rapid development of corn. North Western Dent has already been tried with very satisfactory results in some parts of the Townships. It is our intention to further the growing of this sort as rapidly as possible as we are convinced that while the tonnage may not be quite as heavy yet the improved quality of the resulting ensilage will quite make up for that. No other factor will have quite so much effect on the corn crops of this province as a definite appreciation of what goes to make up quality. All experimental evidence thus far goes to show that if a corn crop is to give the best quality of ensilage the ears must have reached the glazing stage. The varieties now commonly grown in the majority of cases do not reach any where near this stage and not infrequently do not develop ears at all. The writer is deeply conscious of the fact that there are many other factors influencing the proper development of the corn crop, which do not come within the scope of this article.

In conclusion it should be said that as the variety exists at present it provides a good opportunity for selection and improvement. Like most commercial varieties it lacks somewhat in uniformity to any definite type or color. It is the intention of the Cereal Department at Macdonald College to undertake at once systematic selection on this variety with the hope of developing a more uniform strain which will retain its early maturity and yet be somewhat higher in yield. The writer will welcome enquiries from anyone who wishes to have further information regarding this variety.

L. C. RAYMOND

Early winter is usually the best time to make provision for the seed grain to be used the following spring.

Change of seed is seldom advisable for careful farmers. As a rule the seed should not be changed unless there has been a crop failure. In some instances it may be advantageous to try a new variety or re-selected stock of an old sort; but it is usually best to make such experiments on rather a small scale. If an acre or two of the new seed be sown the first season, the farmer will be in a position to grow the new sort quite extensively the second year, if he finds it promising for his conditions.

THE COST OF MACHINERY

The cost of farm machinery is measured by its usefulness and not by the dollars and cents that are paid for it. Before buying a binder, a packer, a tractor, or a thresher, the problem of its earning capacity on the farm where it is to be used should be carefully figured out. If the earning capacity measured in dollars is not equal to its cost plus the wear and tear and interest on the investment during the period of its natural life it should not be bought. Some other means of doing the work required should be sought out.

A machine makes the largest possible profits for its owner when the circumstances are such that it can be used continuously in profitable work until it is worn out. The loss comes when it is allowed to rust out or rot through want of active use or judicious care.

The average farm implement, we are safe in saying, does not prove to be more than forty per cent efficient so far as its life work is concerned. The other sixty per cent disappears in rust and decay. Labor units are the measure of the life of a machine in years. The United States department of agriculture recently made some interesting investigations into the service value of farm implements. It was found that the cost per acre covered is the real measure of the value of the service of an implement and that the more acres covered per year the more profitable the investment. For example, a mower that covers but fourteen acres per year cost its owner thirty-six cents per acre, while the mower that covers fifty-three acres per year cost its owner only ten cents per acre.

Of all the implements included in this investigation, the walking plow showed the greatest number of days of service, and this was only 224 days out of a total life of twelve years. The two-row corn planter showed the shortest life—only nine days out of eleven years. The cost of the walking plow was less than ten cents per acre, while the cost of the two-row corn planter was eighty cents per acre. This included repairs and the amount charged against the implement toward getting a new one when the original was scrapped.

These are exceptional cases and bear in mind that the survey was made under the conditions which obtain in New York state and are not in any way an index of the life of implements under western conditions, but the lesson taught is the same. A binder, for instance, can be used only a few days in the year, but when properly cared for and stored its years are more than doubled.

In buying machinery therefore, the average farmer should carefully consider the amount of work to which the particular machine can be put. A man with 160 acres would do well to stick to horses rather than attempt to make a tractor pay. A man with even a section of land devoted largely to cereals should hesitate long and carefully before buying a thresher for his own use. It usually would be better to wait for a professional thresher to take care of his grain than to invest his money in a machine of his own. If, however, his circumstances are such that he can put this tractor or threshing machine to profitable use beyond the limits of his own farm, it is quite another problem. This principle should prevail every transaction involving the expenditure of money for farm machinery.

It might be convenient to have various kinds of packers, but unless these implements can be put to profitable use they become a source of loss. The same is true with a silo or any other farm equipment.

The point which we wish to emphasize is—consider carefully every investment in relation to what it will produce in dollars and cents before making the purchase. This introduction of careful business methods into farm transactions will, by preventing overhead waste, enable the farmer to show at the end of the year a profit on his various farming transactions.

C. A. FONTAINE,

Oka.

AGRICULTURAL COOPERATION

Be on your Guard !!!

Under this heading, M. Jean Trudel publishes in the "Bulletin des Agriculteurs" the following judicious warning respecting the precautions to be taken before joining any cooperative movement:

I am not ready to say, like some people who take their inspiration from the big sensational newspapers, that farmers are making enormous revenues, but I do say that nowadays all of them have a little money. Agricultural products sell at very high prices, and notwithstanding the price of labour, agricultural implements and other indispensable accessories of the farm, notwithstanding also the high cost of living, and taking everything into account, there is always something remaining in the farmer's pocket, while if he has been able in spite

of all the unfavorable circumstances to add to the acreage of his crops he has done himself a good turn, for he has increased his income by just so much. It can well be said then that in general the farmers have money.

On the other hand the business of many men who were comfortably off, and even that of certain well supported industries or enterprises, are now in a condition of decay. The real estate business for instance has seen its best days. In consequence of this condition of affairs a good number of men are forced to seek a new field in which to exercise their spirit of enterprise.

People have not been slow to observe that in these times it is in agriculture and kindred industries that money has been made. They have also noticed that cooperation has made considerable progress during the last few years in our province, and that it seems to be particularly well appreciated by farmers. A short instant of reflection has sufficed to suggest to them that in this connection they might find opportunity for a profitable "scheme". Is it very astonishing then that for some little time past a crowd of fantastic enterprises have sprung into existence, decked out with names which includes the words "cooperation", "cooperative", "agriculture", or similar ones? What are these enterprises? How are they organized? What is their aim? What is their manner of doing business? Who are their managers?

There is no question of denouncing them or yet of combatting them. But it seems certain that the facts justify us in putting our farmers on their guard. Business is free to all, and each one has the right to seek to make his living where he can find it, providing that he does it in a legitimate manner; but on the other hand people have the right to be given certain information and necessary warnings. In this particular case the people in question are the farmers. And who will render them this service if not the agricultural organizations which are specially so situated for knowing what is going on? If these neglect to do it they are failing in their duty, which is to protect the interests of their members.

It is then necessary now to warn farmers against what I will call their own weakness. They know very well what this weakness has cost them in the past. Their subscription of a share or shares, one unfortunate day, in the stock of some phantom company, has sometimes caused them a loss of thousands of dollars. Those who have experience of our court houses have been witnesses of the gigantic fights which some farmers have had to sustain, often before several courts, in order to be liberated from a signature to a note or a subscription to which they had consented on the representations of some agent. It is an unfortunately established fact that the agricultural class has been too often the easy prey of certain able men. And now that these same men know that money is more plentiful with the farming class than ever before they are not likely to turn aside from what they have already found to be a profitable field of action. It is therefore for the farmers to take their precautions against further imposture.

Now in presence of the existence of such associations and companies, which have nothing agricultural about them but the name, and nothing cooperative but less than the name, what ought the warned farmer to do? He should most undoubtedly make any agent who approaches him, give his name and authority, and show his credentials.

TESTING SEEDS FOR FARMERS AND MERCHANTS

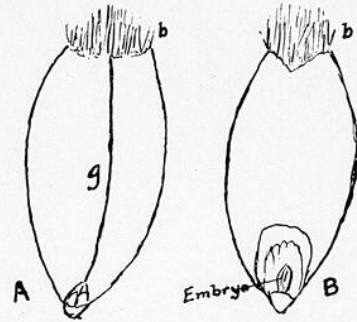
The Dominion Seed Branch with laboratories at Ottawa, Winnipeg and Calgary reported over 35,000 seed tests for the year ending June 30th. The growth of seed testing in Canada is indicated from the fact that only 5,775 samples were reported in 1909. The great bulk of the work in our seed laboratories is done between September and June when each laboratory may handle up to 200 samples per day. Only ten samples are tested free of charge for any farmer or seed merchant during the season. Over this number, the service is charged for at cost.

Official seed testing is the basis of Government seed control, which in older European countries is rated as a leading Government service to Agriculture. Any country without an efficient system of seed control soon becomes the dumping ground for inferior seeds from other countries, and low-grade homegrown seeds may be sold to unsuspecting farmers. Our system is frequently referred to in other countries as being the most practical and efficient. Its importance is now being better appreciated when it is required that imported seeds are not released from bond until they are approved at the seed laboratories, and when cereal grains, flax, corn, as well as clover and grass seeds, are marketed on the basis of fixed quality seed grade standards.

BOYS' AND GIRLS' COLUMN

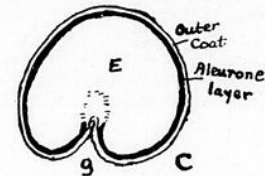
Wheat (Part 2)

The flowers of our common wheats are self-fertilized, and open for but a short time. After fertilization the grain gradually develops, passing through four distinct stages—the milk-ripe stage, the yellow-ripe or dough stage, the full-ripe stage, and the dead-ripe stage.



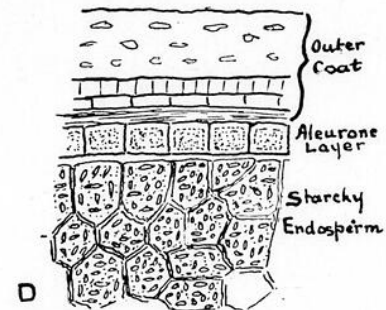
Grain of wheat — A. grove side, B. Embryoid side, b. brush, c. embryo, g. groove.

If a mature grain be examined closely the embryo or germ will be found at one end, a bunch of hairs at the other end, and a crease or groove along one side. If a thin section be made of a grain and this be examined with a strong magnifying glass, there will be seen an outer skin or coat made up of three layers, enclosing the endosperm or food. The outmost layer of the endosperm is the aleurone layer which is rich in protein. The endosperm proper is composed of cells filled with starch, and gluten and other proteins. It is the gluten that makes wheat flour so valuable in bread-making, as its sticky nature permits of the rise of the dough.



Section of grain of wheat showing the outer coat, Aleurone layer, the Endosperm and the Groove.

When wheat is milled the outer coat is removed and along with it come the embryo and the aleurone layer and a small amount of the starchy endosperm. This by-product constitutes bran which, however, varies in composition according to the milling process employed. *Shorts* differ from bran only by the more finely powdered state of the outer coat. It is usually lower in price than bran on account of the practice of the millers in adding the sweepings and other poor products. In the grinding, sifting and bolting of the endosperm the material that passes through fine silk bolting-cloth is flour, while the coarser particles remaining behind are the *middlings*. These also vary in value and composition according to the thoroughness of the milling process.



Section through part of grain showing the layers and the endosperm (much magnified).

Sometimes the entire grain is ground, and such flour is called *graham flour*. When the coarsest part of the bran is removed in grinding the flour is called *entire wheat flour*. The presence of the embryo in flour injures its keeping qualities although it contains a high percentage of protein. There are various grades of *patent* or *straight bread flour* which is obtained by the removal of all of the bran. Usually about 75% of the grain is turned into patent flour. During war time the flour approached entire wheat flour in composition.

Select the choicest grain for seed, preferably from a standard early variety. Thresh it in a clean machine. Do not thresh seed grain closely, this injures the grain and its vitality.

ICE SUPPLY ON THE FARM.

In the temperate and in many cases extreme climate of Canada, ice is as much required in the summer as it is easily procured in the winter. In some parts, it is true, while climatic conditions are favourable, streams, lakes, ponds, etc., are far apart. In the majority of cases, however, the failure to take advantage of a naturally supplied commodity that is at once a luxury and a necessary adjunct to success in several lines of farm work, is clearly the result of shiftlessness or laziness.

Source of Supply.—The source of the ice supply should be reasonably clear, free from current, and as pure as possible. The area to be utilized should be kept free from snow during the early part of the winter so that the ice may be free from slush or surface ice.

Quantity Required.—If any estimate may be made of the daily requirement for say four months, the amount to be harvested may be roughly calculated. A cubic foot of ice weighs 57½ pounds approximately. A daily consumption of ice of 115 pounds (2 cu. ft.) would amount to about 7 tons during the season of use. Allowing for wastage, a building 10' x 10' x 10' would supply ample space, with careful packing. Another method of estimating, used by dairymen, is that approximately 1½ tons of ice will be required to cool 1½ milk of the average cow.

Storage.—The ordinary storage of ice is a simple matter provided certain essential features are included.

1. The building should have no floor other than a foot or two of stone — boulders at the bottom grading up to small stone or cinders at the top. On top of this should be placed one foot of sawdust.
2. The walls may be single boarded, but are best sheeted inside and out leaving an air space the width of the studding. At least a foot of sawdust should be placed between the ice and the walls.
3. The roof should contain a ventilator and two windows to draw off the heat from over the ice.
4. The opening for filling should either be continuous or consist of a series of doors one above the other. By using a wooden slide or gangway inclined from the ground to the ice-level, filling is easily accomplished with a horse, a block and a length of rope with a noose at one end.

Note.—For detailed description of small ice-houses, cold storages, etc., procure bulletins Nos. 20 and 49 from Publications Branch, Dept. of Agriculture, Ottawa.

GENERAL ADVICE REGARDING STORING AND HANDLING

1. Keep each tier of blocks level. Try to cut or obtain all blocks as nearly one size as possible. Fill all crevices and cracks with crushed ice or snow. Make the mass as nearly a solid block as possible.
2. Use fresh sawdust as a filler. Planer shavings, while a substitute, are too coarse. Cut straw, or hay, chaff, etc., may be used, but are not so good as sawdust. Where such material is used leave a space of two feet between the walls and ice.
3. Place no sawdust between the tiers of ice, but see that it is well supplied elsewhere. Leave no spaces unfilled. Place one foot to eighteen inches over the top.
4. From the time the ice is covered, and during the summer, inspect the ice-house carefully from time to time. Fill all holes caused by setting and wastage and rake over the top of the sawdust to form a mulch of 3 inches or so of dry sawdust. A little care in this regard will be responsible for hundreds of pounds of ice saved.

Utilization.—As to the utilization of ice little need be said. Suffice it to mention that many of the gravest defects in our dairy products to-day would largely disappear with the prompt cooling of the fresh milk. For the proper maintenance of household economy ice may seem a luxury at first. Once used, it becomes a necessity. One of the most satisfactory buildings on the farm is the ice-house, or better, the automatic refrigerator or cooling room in conjunction therewith.

G. B. BOTHWELL,

Acting Dominion Animal Husbandman.

A CANADIAN SOCIETY OF TECHNICAL AGRICULTURISTS

If organization ever meant anything in the world's history it means something to-day. Without organization it is impossible for large groups of individuals, and difficult for smaller groups, to achieve success in their various lines of occupation.

An organized group of men representing a profession is not only a power which can advance the interests of its members, but it is an organization which can wield a mighty influence in the betterment of the national welfare and prosperity.

For years we have had our medical men, dentists, engineers, chemists, etc., welded together in separate organizations, who object it has been to further their respective professions. Who can gainsay the statement that each of these organiza-

tions has not been a powerful factor in advancing the cause of civilization as well as furthering the interests of their own associations at a pace commensurate with the progress of the rest of the world? Agriculture, admittedly the basic industry of a young country, as a profession remains unorganized. It is now proposed to bring about such an organization of Canadian technical agriculturists under the name of "The Canadian Society of Technical Agriculturists".

OBJECTS

- (1) To advance the cause of scientific Agriculture in its various phases, and bring the members of the profession to a fuller realization of the importance of their calling.
- (2) To bring about a closer co-operation between all workers engaged in the agricultural profession in Canada, and aid in bringing about a closer operation and co-ordination of the Federal and Provincial administrations in agriculture.
- (3) To aid in ensuring the employment of technical men for technical positions by bringing the public at large to a fuller realization of the value of competent, technically trained agriculturists.
- (4) To aid in attracting the best men to the profession by attempting to establish an adequate standard of remuneration for technically trained men and women.
- (5) To serve as a medium for keeping employers of technically trained men in touch with competent eligibles.
- (6) To bring about a closer co-operation between the profession as an organized body, and the various agricultural associations throughout Canada, and wherever possible to aid them in their organization and propaganda work.
- (7) To serve as a medium where progressive ideas for improvement in agricultural education, experimental, research and publicity work etc., can be discussed and formulated into practicable working form and recommended for adoption when deemed advisable.
- (8) To ultimately serve as a medium for the publication of a journal in the interests of scientific agriculture in which advanced ideas for the development of the industry may be exchanged.

EMERGENCY SEED SUPPLY

Dominion Seed Purchasing Commission

The consolidated balance sheet, covering the operations of the Canadian Government Seed Purchasing Commission for the past three years, has been audited and found correct. The total sums advanced by the Department of Finance for the purchase of seed supplies on requisition from the Dominion Seed Commissioner, amounted to \$11,896,540.96; and the total of refunds to the Receiver-General from the proceeds of sales was \$11,903,437.76. Net assets including seed grain in storage are valued at \$37,888.85. The salaries and expenses of the experienced Seed Branch officers comprising the staff of the Commission were not charged against the cost of the seed. The order-in-council which established the Seed Purchasing Commission directed that the seed supplies should be purchased, stored, cleaned, sacked where necessary, and sold at the net cost as nearly as might be determined.

The business of the Commission covers the period beginning October 1916 and ending September 1919. It includes the purchase and sale of seed wheat, oats, barley, rye, corn, peas and beans, subject always to inspection as to the established grades for seed grain which were provided under the Seed Control Act. Inspection was administered by the Seed Inspection Division of the Seed Branch. Every car lot of seed purchased or sold was examined by seed inspectors, and samples were submitted for tests as to purity and germination by the Dominion Seed Laboratories at Ottawa, Winnipeg or Calgary. Delivery consisted of bill of lading, licensed weighman's certificate, seed certificate and sight draft.

This system of meeting emergency seed situations was adopted on the recommendation of the Seed Commissioner. It is based on the establishment of official seed grades for grain, and on the principle that municipal governing bodies supported by their Provincial Government are in the best position to deal with the extension of credits to needy farmers.

GEO. H. CLARK,

Seed Commissioner.

SOURCES OF EARNINGS OF CANADIAN RAILWAYS.

The following table taken from the annual report on Railway Statistics, issued by the Department of Railways and Canals, shows the sources of the earnings of Canadian railways during the years 1917 and 1918:—

	1917.		1918.	
	\$	cts.	\$	cts.
Rail line—				
Freight	215,245,256	49	228,244,416	07
Passenger	61,290,290	07	67,089,362	62
Excess baggage	569,566	07	595,790	35
Sleeping cars	2,832,750	58	3,179,760	94
Parlour and chair cars	268,875	33	262,576	39
Mail	3,169,910	97	3,288,733	75
Express	8,999,073	85	9,824,583	29
Other passenger trains	72,110	40	64,024	66
Milk	538,486	82	550,416	08
Switching	2,380,706	18	2,917,752	37
Special service train	113,832	01	89,677	79
Other freight train	27,652	04	36,920	15
Water transfer	41,518	50	1,529	61
Totals	295,550,029	94	316,145,544	07
Water line—				
Freight	2,265,118	77	2,266,102	13
Passenger	1,841,356	53	432,537	50
Excess baggage	3,023	04	2,995	71
Other passenger service	1,743	10
Mail	17,307	11	20,564	70
Express	55,957	82	25,476	65
Special service
Other	158,804	93	Dr. 139,749	47
Totals	4,397,311	30	2,608,027	22
Incidental—				
Dining and buffet	3,026,048	70	3,336,808	34
Hotel and restaurant	542,581	61	627,518	13
Station, train, etc., privileges ..	99,875	58	98,847	47
Parcel room	82,446	02	88,479	48
Storage—freight	247,132	61	342,772	95
Storage—baggage	77,134	48	85,052	19
Demurrage	1,526,214	72	1,936,611	52
Telegraph and telephone	328,295	29	281,167	59
Grain elevators	1,189,466	97	888,454	99
Stockyards	10,262	42	24,859	27
Rents of buildings, etc.	1,457,494	70	1,488,020	86
Miscellaneous	1,820,245	80	1,918,485	88
Totals	10,407,098	90	11,117,078	67
Joint facilities, Cd. bal.	417,038	96	349,499	99
Gross earnings	310,771,479	10	330,220,149	95

CO-OPERATIVE PURCHASING OF FARM REQUISITES

II

The purchase of goods in large quantities by an associated group of persons for distribution amongst themselves according to their needs, should prove of great benefit, and where the goods are sold retail in small quantities, as in the case of the large working class co-operative stores, the advantage of the system has always been quickly recognized.

The application of the principle to the co-operative purchase of farming requisites is most beneficial to the small farmer who only requires to buy manures, cake, seeds and farm implements or machinery in small quantities. By purchasing large quantities direct from the manufacturer and selling at cost price, a co-operative society enables the small farmer to procure his goods at a much more moderate rate than he could possibly do by purchasing for himself alone from the local store-keeper. He obtains, moreover, the benefit of lower rates of freight, and he is assured of the genuineness of the goods.

Such a society is not only in a position to buy from large merchants, or manufacturers, but it can guard itself against adulteration or misdescription by analysis, where this cannot be done without entailing expense which tends to discourage the small buyer from protecting himself.

Although it is evident that the benefit of such co-operative purchase is very great in the case of the small farmer, there is no reason why it should not be equally advantageous to the large farmer, though for a less obvious reason. The quality of manures and feeding stuffs can practically only be tested by analysis, and even then some scientific knowledge is necessary to appreciate the results obtained and the relation between the price charged and the value represented by the analysis. Admitting that many farmers are fully qualified to bargain on equal terms with those engaged in the trade, it is certain that there are many who are not; many more are indisposed to take the necessary trouble, and many again are inclined to rely unduly on the description of the goods furnished by the seller. To such, a co-operative society is of the greatest value, for they can depend on their interests being duly safeguarded in every way. They know that they are paying wholesale price of an article and they have the further assurance of freedom from adulteration and correct description, because in such a society practically all inducement to overcharge disappears, owing to the fact that any advantage taken of a member would only increase the profit which would afterwards be returned to him in the shape of increased dividend.

These advantages are best secured by a genuine co-operative association; that is to say, a society in which the capital is subscribed by those interested as consumers, and in which the profits are distributed by paying a fixed rate of interest on the capital, and then dividing the surplus among the members in proportion to the extent to which they have participated in the business. Only members should be admitted to the advantages of the undertaking which is carried on for their mutual benefit, and all should have an equal voice in the management.

One object of such a society would be to make contracts in advance for the supply of, say, fertilizers. Notice of the price is then sent to each member, who is asked to give his order within a reasonable time. Depots can be established in different districts, and the manure is sent freight paid to the nearest station. Great attention should be paid to quality and condition, the object being to provide the members with the best and most economical means of fertilizing their soils and increasing their crops. Among other things the society may undertake the chemical and physical analysis of soils, and in this way the members can be advised as to what kind of fertilizer or treatment their soil requires.

Wherever such co-operative societies are formed, their aggregate orders are sufficient to enable them to obtain goods from manufacturers at cheap rates, or, if they are not large enough to enable them to do this to sufficient advantage, this can be remedied by uniting two or more societies in a federation which, by amalgamating their requirements, are placed in a position to purchase in larger quantities.

Capital is raised by the issue of shares, say 5 shares, the interest on which may be limited to 5 or 6 per cent; any profit above that amount being divided among the consuming shareholders in the proportion of two-thirds on the quantity of material purchased, and one-third on the capital invested in the company. There may be a fixed annual subscription of say one dollar.

Sales need not necessarily be limited to members. The business of the society may be considerably increased and extended in other directions, as by sales to farmers and others not members.

The expenses of carrying on the society can be defrayed by charging an entrance fee of say 5c. per acre on each member's holding and a registration fee of say 25c per ton in the case of fertilizer

purchased, or a percentage on other goods or according to such rules as the members may draw up.

B. C. T.

FARM WATER SUPPLY.

There is Scriptural authority for the statement that bitter waters and sweet do not flow from the same fountain. The same truth applies to wells on the farm. The family that uses a well or spring subject to contamination is almost surely destined to taste the dregs of sorrow or suffering for having drunk its disease-laden output. Investigations made by the United States Department of Agriculture indicate that only a small minority of farm-water supplies can be classed as unqualifiedly safe and desirable. On the average three or four farm wells are located within 75 feet of a back door of the house and in the direction of the barnyard.

That convenience and first cost, not safety, have been the deciding factors in such cases is made evident by the nearness of barnyards, pig pens, pastures, fertilized fields, sink drains, privies, cesspools, and areas rendered insanitary by chickens, slops, and other filth. Too frequently the seepage from these and other sources, after joining the ground water, moves to wells and springs, impairing the water supply by impurity that may be grossly poisonous.

SEWAGE DISPOSAL

Popular indifference to the effective disposal of sewage has existed so long and so universally that only within comparatively recent years has it been realized that this waste product of human life is poison and must be kept from the food and drink of man. From the specific germs or poison that may be carried in sewage at any time there may result typhoid fever, tuberculosis, hookworm disease, cholera, dysentery, diarrhea, or other dangerous ailments, and it is not improbable that certain obscure maladies may be traced eventually to the poisonous effects of drainage from human waste. The poison is invisible to the naked eye and it may be carried by many agencies, by devious routes, and be unsuspectingly received into the human body. Typhoid fever is peculiarly a rural disease, and many instances clearly indicate serious neglect of responsibility with regard to sanitation by people who live in the country.

Not to dispose of sewage promptly invites nuisance, but not to dispose of sewage cleanly and completely invites disease. It is not enough that human filth is taken 50, 75, 100, or 150 feet away from a well or spring, or that it is taken merely to lower ground. Given loose or open subsoil, seamy ledge, or long-continued pollution of one plat of ground, the zone of contamination is likely to extend and readily may reach quite distant wells; especially at such times as well waters are lowered by drought or heavy pumping. Whatever the system of sewage disposal, it should be entirely and widely separated from the water supply, and, if possible, the surface of the sewage in any leaky privy, vault, or cesspool should be lower than the lowest water in any near-by well. The United States Department of Agriculture has prepared Separate No. 712, from its 1916 Yearbook, entitled "Sewage Disposal on the Farm," which gives details regarding various type of out-houses, suggestions regarding plumbing, cesspools, septic tanks, and related subjects. This pamphlet will be mailed free on request.

PURE, EASILY OBTAINABLE WATER, THE NEED.

One of the first and obvious needs of American farms is pure water supplies. From the standpoint of the housewife, second only in importance to purity, is the installation of a water system in the farm house that will save labor.

Continued pumping will not improve water in a well if the sources which feed it are permanently at fault. Wells cannot be located in all cases to be wholly free from pollution, but the greatest safeguards are clean ground and as wide separations as possible from the probable channels of impure drainage.

Water for domestic use should be clear lustrous, odorless, colorless, wholesome, soft, neither strongly acid nor alkaline, and its temperature for general farm purposes should be about 50 degrees. These characteristics, however, are never proof of purity, for a glass of water may possess them all and yet contain millions of disease-producing germs.

Ground water is the ideal supply for the farm. Any farmer who is about to have a deep well, and

who is uncertain of the depth and quantity or quality of the water likely to be encountered, should describe fully the location and condition of his project to National or State geological authorities and ask for advice. The use of the willow, hazel, or peach stick for locating underground water is without merit, although "forked-stick" artists from experience often are better able to judge the probabilities of ground water than the average person.

KINDS OF WELLS.

Wells are spoken of as shallow or deep, dug, bored, driven, or drilled, and in the case of tubular wells, as nonflowing, flowing, or artesian. Persons interested in the various types of wells and their construction, advantages, disadvantages, etc., will find the subject treated in Farmers' Bulletin No. 941.

Wherever possible, the farmhouse should be fitted with some sort of running-water system, simple or elaborate, according to the investment the owner is able to make. For such systems water may be raised by natural flow, hydraulic rams, pumps, air lifts, or air-displacement pumps. Hydraulic rams are the most economical water-lifting devices. Since rams of various sizes and makes perform differently, it usually is necessary to accept the mechanical details determined by the manufacturer. The minimum, never more than the average, now of the spring should determine the size of the ram. Otherwise, the one selected may be too large for the dry-weather flow. Small flows may be determined by nothing the time required to fill a vessel of known capacity. Larger flows may be determined by weir measurements.

Where the water supply is far from the ram site, it is usual to pipe the flow to an open tank or reservoir located so as to secure the desired length and fall of drive pipe. Sometimes the flow of a spring is too small to actuate a ram that is sufficient for domestic requirements. In such instances and where a near-by brook can be dammed to obtain the necessary power head, the recoil of the ram may be employed to admit the spring water, which is pumped by the fall of the brook water in the drive pipe.

Motion of water produces friction, which increases with the length and roughness of the pipe and the rapidity of the water's movement. Hence, wherever much water is to be delivered through a long pipe the power or head necessary to overcome friction should be determined. The bulletin mentioned before (Farmers' Bulletin No. 941) contains a table which shows the friction head; that is, the number of feet to be added to the vertical height for each 100 feet of iron pipe (not new) to overcome friction when discharging given quantities of water.

SELECTION OF PUMP

In selecting a pump one should determine the kind of well to be used, its inside diameter, depth to the bottom, the depth cased, depth to the water level, both when the pump is at rest and in operation, and the maximum yield. The maximum quantity of water required per day should be calculated also. One should also determine the distance from the well to the proposed location of the pump and the vertical height between these points; likewise the distance from the pump to the reservoir or tank and the vertical height between these points. The kind of power to be employed should be settled upon also—hand power, windmill, gasoline or oil engines, or electric motors—and the method of transmitting the power.

Farm pumps usually are of the suction, lift, force, deep-well type or some combination of these. Suction and lift pumps do not raise water above the pump nor discharge it under pressure. Suction pumps require the cylinder to be above the water level of the supply. If a perfect vacuum could be created within the cylinder water could be raised vertically by suction 33.9 feet at sea level. However, the actual suction lift is usually not more than two-thirds of the theoretical lift. Methods of making tight joints are described in the bulletin referred to.

Horizontal suction pipes may extend long distances, providing the friction loss plus the vertical height from the water level to pump valve does not exceed the limiting suction lift. Where a pump can not be placed so that the limiting suction lift will not be exceeded, it is necessary to lower the pump cylinder into the well, raising the water from the cylinder to the spout by the direct lift of the piston. Water can be pushed more easily than it can be pulled, hence, rather than resort to extreme suction lifts it is preferable to lower the cylinder to within 15 feet or less of the supply, or still better, to submerge it.

Where water is discharged against pressure a force pump is necessary. A practical installation for the kitchen sink is a combined suction and force pump which will be found a great labor saver for the housewife.

DEEP-WELL PUMPS

Deep-well pumps are heavier and stronger than those described above. They may be of the lift or cylinder should be near (within 15 feet) or else below the lowest water level which pumping and drought may create. Submergence is the preferable arrangement. In all installations the size of the pumping cylinder must be determined from the size, depth, and yielding power of the well, the quantity of water required, and the available power. Deep wells and hand or windmill outfits take small cylinders.

Pumping by means of compressed air is very old, but the systems used prior to 1909 required the air supply to be turned on or shut off according to whether or not the water was needed. Based on a patent granted in that year, a two-cylinder air-displacement pump submerged in the water supply and controlled by the opening and closing of the faucet, was devised. The essential parts of installation, besides such a pump, are an air compressor, storage tank, engine or motor—with air and water pipes, and minor attachments. The pump operates only when water is used, starting whenever a faucet is opened and continuing until all faucets are closed.

The chief advantage of air-displacement pumps is that water may be taken from ordinary depth or lateral distance, or from several sources, with one power outfit and delivered direct from the well to the faucet. The power plant may be located wherever convenient and as many pumps may be used as there are sources of water. Both hard and soft water may be delivered by using two pumps and the necessary piping systems. Air-displacement pumps are not adapted at present to lifts much over 125 feet or to wells less than three inches in diameter, nor can they be used where more water is required than the well can supply within a specified period. Air pipes and air-displacement pumps must be tight and remain tight in service, and working parts must be kept in good order.

HORSEPOWER NEEDED

Water may be raised by hand, wind-mill, hydraulic rams, steam, hot air, gas, internal-combustion engines, or electric motors. Hand power is unsuited to large supplies or high lifts. Windmills are probably the most familiar type of mechanical power used, and often are arranged to start and stop automatically. Gasoline and oil engines are well adapted to farm pumping, and may be equipment to stop at any desired pressure in a supply tank. The use of electricity for pumping is increasing. The method is clean, quiet, and convenient, and starting or stopping a distant pump by throwing a switch may be practical wherever transmission lines are sufficiently near.

The theoretical horsepower needed to raise water is found by multiplying the gallons pumped in one minute by the total lift, in feet, including friction in both suction and discharge pipes, and then dividing the product by 4,000. The horsepower as computed should be multiplied by from 2 to 4 to overcome losses in pumping and still allow for a reserve of power. Ordinarily one to two horsepower engines are sufficient for farm pumps, but it is always safest to determine this point by computation.

An advantage to be derived from the well-installed farm water system often overlooked is the benefit it affords in the way of fire prevention. With relatively small expenditure, fixtures can be added to a pipe system, which give ready access to the water supply for fighting flames. In almost every case a fire can be easily put out if discovered at its early stage, providing there is fire-fighting apparatus near by, and all hands, even the children, are taught and drilled to use such apparatus coolly and skillfully.

U. S. Weekly News Letter

SEEK EXPERIENCES OF SETTLERS IN CANADA

Department of Immigration Offers Prize for Best Accounts of Successful Ones

In order that the Department of Immigration and Colonization may have at its command authentic accounts of the experiences of successful settlers in various parts of Canada it has decided to offer cash prizes for letters or articles not exceeding two thousand words written by settlers in each of the

nine Canadian provinces. The articles will be judged by a committee to be appointed by Hon. J. A. Calder, minister of immigration and colonization, and should be mailed not later than February 14th, 1920, to the director of publicity for the department. Three cash prizes will be given, one of seventy-five dollars, one of fifty dollars and one of twenty-five dollars, in each of the nine provinces.

It is explained that the competition is not a literary contest, the official announcement stating that:—"Literary style, correct spelling, etc., will not be considered essential. Tell your story in your own words." It is believed that the procuring of a number of graphic and truthful stories of how success has been won from the soil in all parts of the Dominion will do much to contribute to a future movement to Canada of the right class of settlers.

Full details of the competition are given on a poster hanging up in every post office throughout Canada.

LOSSES DUE TO RATS MILLIONS ANNUALLY.

Of all Animals Rat is worst Pest, says Writer.

From the Ninth Annual Report of the Commission of Conservation, the following extract showing the pernicious habits of rats and mice is taken:—

The destructive powers of rats and mice are well known, but the manner in which their presence is tolerated in city and country would indicate that the immense losses they cause are not fully appreciated. Of all animals, the rat is the worst pest. As a carrier of bubonic plague, it is a serious menace to public health; as a destroyer of grain, stored foods of all kinds, eggs, chickens, and other food products, it is unequalled. And yet no serious efforts are made to cope with this powerful enemy in our midst.

Bubonic plague is transmitted from rats to human beings by fleas. The destruction of rats is an essential step in the protection of communities from this disease. In the fourteenth century, it is estimated that about 25,000,000 people died in Europe from the "black death", as this disease was called, and 2,000,000 deaths are stated to have occurred during the epidemic of plague in India in 1907. Modern methods of preventing the spread of plague involve the most vigorous eradication of rats.

But we are concerned now with the destruction of food by rats, which, as I have stated, is not sufficiently appreciated. In Europe, it was estimated in 1907, after a full inquiry, that the average annual loss caused by each rat in Great Britain equalled \$1.80, in France \$1, and in Denmark \$1.20. The losses in the rural districts in Great Britain and Ireland due to rats in the same year were computed at \$73,000,000; and a capital of about \$10,000,000 was employed in the industry supplying means to destroy rats. At the present time, the English Board of Agriculture is making special efforts to combat the rat pest in England. Mr. E. W. Nelson, Chief of the Biological Survey of the United States Department of Agriculture, in a recent valuable article on the rat pest, estimates the annual losses in the United States due to rats to equal at least \$200,000,000. He further makes the interesting statement that in order to feed and otherwise provide for this enormous destructive army of rats the labour of 200,000 men is required.

When the prolific habits of rats are taken into account the extent of the menace they constitute will be made still clearer. The brown rat begins to breed when about three or four months old; they breed from six to ten times a year and produce, on the average, ten young in a litter. If we imagine a pair of rats breeding at this rate for three years without any deaths among their progeny, at the end of that short period the number would be increased to over 350,000,000 rats.

The main reason for the abundance and destructiveness of rats and mice is that we provide food and shelter for them. To combat them successfully, we must refuse them both these vital essentials. Shelter should be denied by making buildings and other haunts rat and mice-proof by various constructional methods. Seed grain, provisions, etc., should be stored in rat-proof containers. The adoption of sanitary conditions in towns and cities, cleanliness about stores, warehouses and other buildings will help to eradicate them. The maintenance of garbage dumps is one of the greatest causes of rat abundance; incineration is the only sanitary method of treating garbage. Systematic campaigns should be organized and such methods of destruction as trapping, poisoning, and hunting with ferrets and dogs should be adopted wherever rats occur.

HISTORY OF FARM BUREAU MOVEMENT

"Farm Bureau" is the title designed by the U. S. Department of Agriculture for those organizations of farmers which co-operate with the government and the agricultural colleges for the improvement of conditions in rural life. The county began as the unit of organization. When our country entered the war the need for farm products seemed so vital to the success of our operation against the enemy that the Department of Agriculture took steps which resulted in the appointment of County Agents in nearly all the agricultural counties of the country. To make this work effective county farm bureaus were organized among the farmers.

The County Agent with the help of government and College Extension workers were instrumental in the preliminary work of organizing the farmers as a war measure to increase production, yet when the war closed these County Farm Bureaus did not disband as was the case in most other war time organizations. There were many counties where farm bureaus organized before the war tho' they attracted very little public notice. But when the excitement of war times had subsided the nation suddenly became aware of the fact that county farm bureaus existed almost everywhere. Instead of disbanding, the farm bureau is expanding and developing types of organization which are becoming permanent in character.

Community Committees are now becoming identified as unit parts of the county farm bureau. The county bureaus then began to form state wide organizations. The momentum of this movement has become so strong that it has developed a national farm bureau federation.

Programme of the Seed Exhibitions organized in January and February 1920.

Agricultural Society	Locality	Date
Deux-Montagnes	St. Eustache	January 15
L'Assomption	L'Epiphanie	January 17
Joliette div. A.	Joliette	January 19
Berthier	Berthierville	January 21
Maskinongé	Louiseville	January 22
Three Rivers	Three Rivers	January 24
Champlain	St. Stanislas	January 26
Portneuf div. B.	St. Casimir	January 28
Portneuf div. A.	Pont-Rouge	January 29
Quebec	Loretteville	January 31
Montmorency div. B.	St. Pierre I. O.	February 9
Montmorency div. A.	St. Anne	February 10
Charlevoix div. B.	Baie St. Paul	February 12
Charlevoix div. A.	Malbaie	February 14
Lac St-Jean div. B.	Roberval	February 17
Lac St-Jean div. A.	Hébertville	February 19
Lotbinière No 2	St. Edouard	January 16
Nicolet	St. Grégoire	January 19
Arthabaska		January 20
Yamaska	St. François-du-Lac	January 22
Richelieu		January 24
Vérchères	St. Théodose	January 26
St. Hyacinthe	St. Hyacinthe	January 27
Bagot	St. Liboire	January 29
Rouville	Rougemont	January 31
Chambly	St. Bruno	February 9
Laprairie	St. Isidore	February 11
Hochelaga	Pointe-aux-Trembles	February 13
Laval	Ville Ste-Rose	February 14
Jacques-Cartier	Pointe-aux-Trembles	February 16
Vaudreuil	St. Lazare	February 19
Soulanges	Cedres	February 20
Mégantic div. A.	Inverness	January 15
Mégantic div. B.	Plessisville	January 17
Wolfe No 2	Ham-Nord Village	January 19
Drummond	L'Avenir	January 21
Iberville		January 23
Napierville	St. Edouard	January 24
Beauharnois	St. Louis	January 28
Argenteuil		January 28
Labelle No 2	Labelle	January 20
Labelle No 1	Papineauville	January 30
Hull div. B.	Maniwaki	February 9
Pontiac div. B.	Chapeau	February 11
Témiscamingue	Villemarie	February 14
Beauce div. A.	Beauceville	January 15
Beauce div. B.	St. Honoré	January 16
Dorchester	Ste. Hénédine	January 17
Bellechasse div. B.	St. Lazare	January 19
Montmagny (haut)	St. Paul-du-Buton	January 21
L'Islet (haut)	Tourville	January 22
Bellechasse div. A.	LaDurantaye	January 26
Montmagny (bas)	Montmagny	January 27
L'Islet	St. Jean-Port-Joli	January 28
Kamouraska	St. Pascal	January 30
Témiscouata	Fraserville	January 31
Matane	Sandy Bay	February 9
Gaspé div. C.	Ste-Anne-des-Monts	February 11
Bonaventure div. C.	Avignon-St. Alexis	February 14
Bonaventure div. A.	Fort Daniel	February 16
Gaspé div. A. No 2.	Barachois	February 19

It is a mistake to believe that cheap farm land has become rare the world over. Farm land is to be had in some of the older countries almost for the asking. But such farms mean nothing without the accessories of a near-at-hand forest supply.

LIVE STOCK

CORRECTION.

We regret that in the contribution of Mr. A. E. McLaurin entitled "Recording Purebred Sheep" which appeared in our December issue on p. 108, typographical errors appeared in the first three lines of the second table, "inch and "inches" being printed instead of "nick" and "nicks". The three lines in question should read:

- No. 1—one nick at base of right ear.
2—two nicks at base of right ear.
3—one nick at point of right ear.

QUEBEC AGRICULTURE IN RETROSPECT

The diversity of Quebec agriculture has once more demonstrated its advantages. 1919 was a poor year in a number of Canadian provinces. It was a poor one for some parts of Quebec and particularly for some features of Quebec agriculture, but for Quebec as a whole there is little complaint to make.

The spring was wet and backward, and after the terrible fall season preceeding this was most unfortunate. Work was far behind and the soil in some places was absolutely unworkable. This meant a poor prospect for a grain crop which, it may be added, was no better than the prospect. It is not an uncommon thing to find farmers who have been in the habit of threshing two to three thousand bushels of first class grain, but who this year threshed not more than two to three hundred bushels of poor quality. On the other hand, a large section of the province that was more fortunate in the spring harvested a splendid crop.

The moderate winter of 1918 and 1919 allowed the seeding to come through in good condition. The abundance of moisture in the spring forced a good grass growth at the start, in fact throughout the season, with the result that what Quebec suffered in grain was made up in hay. The hay crop throughout Quebec is the farmers' salvation this year. It has solved the feed situation to a large extent and for those who have it to sell, a pretty large number this year, the high price because of outside demand insures a handsome return. The corn crop made a slow start in many places but made fairly continuous growth throughout the season, producing on the whole a very satisfactory crop.

Roots in some districts were at their best this year, the greatest difficulty in connection with this crop being the labor problem.

From the livestock standpoint it may be said the pasture season was an excellent one. The spring was a little wet but the summer, apart from one short spell, was good; there was plenty of aftermath and the fall, especially October, was very favorable.

Taking the crop yield as a whole Quebec is probably the best-off province in the Dominion. The market return for farm produce, while on the whole good, has been in some respects disappointing. Chief among the items which have not fulfilled anticipation may be mentioned hogs and lambs. The unprecedented prices in the early summer, perhaps were responsible for too much optimism. In any case the prices prevailing the last few months when the bulk of the supply has been marketed have been lower than expected and lower than either supply and demand or cost of production would justify. Moreover, the violent fluctuations have greatly disturbed the situation and made for unstable business. In view of the progress made in these two channels of production in Quebec, the possibility of much further expansion, and the urgent need of it, the disappointing return is unfortunate and has already done much to cripple the future. A certain amount of credit for this situation is given to the Board of Commerce and it would seem not without some justice.

Certainly the action of the Board of Commerce in regard to the price of pork products, if it has not limited the price of hogs for home and foreign consumption as well, has afforded a plausible basis for adjusting its scope.

The commercial feed situation has accentuated conditions. Never before have feed prices been as high, and according to general testimony never has feed been of poorer quality. Much of the feed is regarded as unsafe to use. Some promise of relief was intimated but none has been forthcoming. In fact the only action taken officially by the Federal authorities resulted in setting an unprecedented price for bran and shorts.

Much as the commercial feed situation affects the production of meat products its greatest effect in Quebec is on dairying. Around this problem hinges one of the greatest activities of the year.

The commercial feed situation is the biggest factor in the cost of producing a hundred pounds of milk in Quebec under winter conditions. The feed question, together with determination to pay less for milk than it is worth and less for it than

practically any other commodity, has driven the farmers of the province to take action in self-defence. Gradually the farmers have been forced to organize in one form or another to take care of some suffering interest, but no movement for organization promises more from any standpoint on behalf of the consumer as well as the producer than the one at present actively under way in connection with milk production. Dairy farming is the prevailing type in this province and the dairy-farmer organization is the one upon which farming interests must pivot.

Farmer movements are sometimes credited with selfishness and narrowness, but no exhibition on the part of the farmers could display more narrowness, more selfishness, and more ignorance, even to the point of being deliberate, than that which characterized the attitude and utterances of those who presumed to represent the consumers' interests in Montreal at the various milk meetings during the past few months. Education for such people must be made compulsory. There is no way of doing it except by farmer organization. What is true of the milk situation is equally true of others, now only partially taken care of.

Quebec agriculture is of the stable type; the past year like others has substantiated the fact, for while some features have suffered others have done well. Possibilities for development are immense, and each year reveals this fact more and more. Each year reveals a need for more cooperative machinery to look after agricultural interests. Much of this is now in process of construction and no time should be lost in getting it into operation.

H. BARTON

CO-OPERATIVE INSURANCE OF LIVE STOCK

In a previous article, reference was made to the subject of co-operative insurance, particularly its advantages to the small farmer in protecting him against the loss of live stock. The methods of establishing and working a co-operative insurance society, as adopted on the Continent, were described briefly. In the present article, it is intended to discuss the advantages of what in the Old Country are known as cow and pig clubs.

Live stock insurance societies can be established by mutual agreement. The mere fact of registry affords no guarantee of the solvency of a society, but the advantage of registry lies in the fact that the rules which are necessary for the purposes of complying with the law do afford valuable help towards good management in various ways and provide certain checks which are wanting in the case of unregistered bodies.

In drawing up the rules of a society, whether a registered or unregistered society, the following points should receive consideration:

In the case of registered societies, the liability of each member for the engagements of the society is unlimited, and this might lead to serious difficulties if the society were to undertake the insurance of animals, such, for example, as valuable pedigree stock, to a greater amount than its funds would justify. In practice, however, such societies being understood to undertake insurances for small amounts, the risks incurred are not great, but it is desirable that the rules should specify the maximum value which may be paid in any one case.

It will be found the better plan to limit the operations of any such society to a comparatively small area, such as a few adjoining townships. As previously pointed out, this enables all the members to know each other and the cost of management can be reduced to a minimum. Where the members are distributed over a large area the duties of inspection, valuing and other matters become onerous and there is not the same protection against deception or neglect.

The main objection to a small area, as mentioned before is, of course, that in the case of a serious outbreak of disease, it may be unable to afford help when most needed. The only way to meet such a contingency is a rule to the effect that if the funds are insufficient to meet all the demands, there must be a proportionate reduction in the amount of compensation to be paid. Another plan is to make a levy on all the members.

In the case of cow clubs, compensation is generally paid at the rate of three-fourths of the full value, but in some the value is allowed up to, but not exceeding, say fifty dollars, with a lower limit for calves. In the case of pigs, it is not uncommon to pay the full amount at which the pig has been valued.

If a local authority exists, which has power to order the slaughter of any animal insured in the society, the compensation payable by the society would only be the difference (if any) between the sum for which the society was liable in case of death and the amount actually paid by the local authority. It is, therefore, to the advantage of such a club to see that its members report the suspected existence of any contagious disease which is dealt with by the local authority to the local police so as to obtain compensation and avoid the whole loss falling on the society. This should be provided for in the rules and it might with advantage be laid down that no compensation shall be paid for loss in the event of any member failing to report a case of contagious disease to the local authority.

If an animal is taken ill, certain members of the society should inspect and value it, but should the disease be of a contagious nature, it must be borne in mind that there is great risk of the disease being unintentionally spread in this way. Any members, therefore, appointed for the purpose should take the precaution of thoroughly disinfecting themselves. The hands should be washed with soap and water and the boots should be rubbed or brushed with a solution of carbolic acid.

The usual method of raising funds is an entrance fee and a fixed annual subscription for each animal, in addition to a charge for inspection and marking the animal on entry. Whilst this system has the advantage of simplicity, it is open to the objection that the owner of a valuable animal pays no more than the owner of one less valuable, but in the event of loss, receives a greater share of the society's funds. This can be adjusted by the payment of premiums on a scale proportionate to the value, each animal being valued on its entry into the society, and its annual revaluation.

The accumulation of a substantial reserve fund is undoubtedly desirable as a protection in the event of an epidemic, but it is very necessary that suitable provision should be made in the rules for the auditing of accounts, etc.

The following is a brief description of the usual methods of conducting a cow club:

The society consists of officers and an unlimited number of members, the officers being the president, vice-president, secretary, treasurer, marker and a valuing committee of, say three members. The marker brands the cow entered, on the horn, or, if hornless, on the right foot. As regards a veterinarian, the members can employ whom they please. If a member's cow falls ill, the owner is to report at once to the secretary, who forthwith advises the valuing committee, all of whom—or at least two—go to see the cow as soon as possible. As soon as the committee has appraised the cow and seen its condition, it becomes the property of the society, and the committee can order its slaughter. The full value of the cow as a healthy animal is fixed, and of this sum the owner receives 75 per cent., the cheque on the society's banking account being drawn by the president, secretary and treasurer. The secretary receives a small salary for his work.

Any person wishing to become a member of the society must be proposed at a quarterly meeting. The entrance fee can be fixed at, say, a dollar for the first cow and fifty cents for each subsequent cow. The subscription can be fixed at say three dollars a year for each cow, payable by monthly instalments. The cost of marking can be fixed at 10c per cow. A member on entering a cow must describe its age, color, etc. pay the entrance fee and subscription and then becomes entitled forthwith to the benefits of the club. Promptness in payment of subscriptions should be insisted upon under penalty of forfeiting all advantages.

No old cow of little value should be accepted and there should be a rule to the effect that no cow that has had more than two calves be accepted. If the marker is suspicious as to a cow being sound he is not allowed to mark such cow without the sanction of the committee.

Any member losing a cow from any contagious disease must thoroughly disinfect before being allowed to enter another cow on the same premises.

The value of these societies to small cow owners is shown by the fact that in one society a farmer received payment for four cows, another small farmer for three cows, and a third on one occasion for two killed by lightning.

Pig clubs are run on similar lines. A small sum may be fixed as an entrance fee for each pig, say 25, or 30c. per member. The subscription for each pig can be fixed at 2c. per week. An extra charge—about double—should be made for insuring boars and breeding sows. Sucking pigs should not be entered. The pigs should be marked on the ear. In practically all other respects a pig club is conducted on the same principles and rules as a cow club.

B. C. T.

LIVE STOCK NOTES.

At a conference held in Winnipeg December 12th and 13th attended by representatives of all interests concerned, the question of making available further supplies of Recleaned Elevator Screenings was fully discussed. It was learned that as a result of the coal strike in the United States and the inability of the railway to move grain to lake head terminals prior to the close of navigation the prospect for any Standard Stock Food accumulating at Port Arthur and Fort William in the near future is very remote.

The action of the United States Grain Corporation in raising the embargo against the import of Canadian wheat into the United States, effective on December 15th, will probably result in the Wheat Board selling considerable Canadian grain in United States markets. This grain would move from Western Canada direct to Minneapolis and would not be cleaned in any Canadian plant.

The conservative estimate is that only 10,000,000 bushels of the balance of the present years crop will be received at Fort William. This quantity would produce approximately only 1000 tons of Standard Stock Feed.

The committee appointed to further consider the matter made the suggestion that a modified restriction be placed against the export of Standard Stock Feed. It was thought that some action of this kind would be necessary in order to secure control of the Standard Stock Feed which would accumulate in the plants of Western Milling Companies.

Mr. N. B. Rimmer of the Feed Division represented the Branch at this meeting and acted as Chairman.

The average price of select hogs during the month of January of the present year was \$17.53 at Toronto, \$18.07 at Montreal and \$16.30 at Winnipeg. These prices represent the lowest point of the price curve up to the end of October. By November 31st, the low point of the year was reached, selects selling at values approximately \$1.00 under the January average. A similar condition of the markets prevailed in 1918, in 1917, in 1916, and farther back. An analysis of the market reveals the fact that the recovery has almost invariably started during the ebb of the Old Year accumulating increases amounting to approximately \$1.00 per month until the apex of the curve is reached toward mid-year.

The average price of select hogs at the Toronto Stock Yards during the Year ending December 31st, 1918, was \$19.21. The average price of select hogs at the same yards, for the year ending December 31st, 1919 will be about \$19.60, or approximately 40 cents per hundred higher in 1919 than in 1918.

During the eleven months ending November 30th of the present year, Canada exported live stock valued at \$47,223,613. Exports of cattle were valued at \$43,103,311, exports of calves at \$1,542,634, exports of sheep at \$1,859,686, and exports of hogs at \$717,982. The revenue from this source during the eleven months, was \$23,193,757 in excess of the revenue from the same source during the entire Calendar Year 1918.

During the Ten Months ending October 31st, the total exports of live stock from Canada amounted to 299,380 cattle, 70,234 calves, 130,177 sheep and 28,616 swine. Of the total exports, 201,087 cattle, 24,893 calves, 52,872 sheep and 1,090 hogs were purchased at Canadian Stock Yards.

According to the above figures, 33 per cent. of the cattle, 65 per cent. of the calves, 60 per cent. of the sheep and 96.2 per cent. of the hogs were not purchased at Public Stock Yards. The total exports however, included pure-bred stock privately sold for breeding purposes. The high percentage direct exports of hogs was due largely to the heavy shipments during the first two months of the year when approximately 22,000 head went out of the country.

The value of the Live Stock Industry as a revenue producer is well illustrated by the financial returns from exports of cattle, calves, sheep and hogs during the first ten months of the present year. During that period we exported 528,407 live meat animals valued at \$36,583,328. Cattle exports were valued at \$32,990,609 and at a head price of \$110.-20; Calves at \$1,391,304 and at a head price of \$19.80, Sheep at \$1,484,263 and at a head price

of \$11.40 and Swine at \$717,152 and at a head price of \$25.06.

Exports from Stock Yards up to time of writing, show a 190 per cent increase in Butcher cattle, 143 per cent increase in Stockers and Feeders, 100 per cent increase in Sheep and Lambs, 63 per cent increase in Calves, and 226 per cent decrease in Hogs, when compared with the same period of 1918.

Of a total of 769,050 butcher cattle marketed at Canadian Stock Yards, during the ten months ending October 31st, it is a matter for sober consideration that scarcely more than two per cent were steers weighing above twelve hundred pounds. It is apparent, that if Canada is to occupy a position of prominence in the export beef business, a great deal of improvement must be made in the weights of cattle produced.

Good weights are to a large degree intimately associated with quality. It is very rare, except in the case of baby beef, that choice quality meat is obtainable from cattle weighing less than ten hundred pounds. In this connection it is found that of the total marketings of cattle during the first ten months of the present year 65,960 head represented common steers and heifers, weighing less than ten hundred pounds per head. Further, 208,725 head, (over 25 per cent.), of the total marketings were steers and heifers of all grades weighing below one thousand pounds.

Killings of live stock at Inspected Establishments in Canada for the ten months ending October 31st, totalled 705,453 cattle, (including calves), 406,344 sheep, and 1,916,984 hogs. Of those amounts, 500,439 cattle, 273,777 sheep, and 751,406 hogs were purchased on Public Stock Yards. A comparison of the purchases on the Yards with the killings, indicate heavy shipments of live stock direct to packing plants, especially in the case of hogs where considerable more than half the animals slaughtered, were shipped direct. Heavy direct shipments of sheep and cattle are also indicated. Continued heavy shipments direct to slaughter have a tendency to disrupt the stability of the market.

It is gratifying to find that of the total marketings of hogs at the five Canadian Stock Yards for the ten months ending October 31st, of the present year, 656,195, over 85 per cent, were graded as selects, and only 4 per cent. as sows.

In view of the general belief that heavy liquidation of sows would take place during the late Fall, it is encouraging to note that the number of sows offered since the first of September add less than one-half of one per cent increase to the marketings since January 1st.

Dominion Live Stock Commissioner

THE CLYDESDALE

By J. W. Wheaton, Secretary Clydesdale Horse Association of Canada.

Nearly a century ago, a horseman of repute in the old land described the Clydesdale in these words: "The most valuable breed of draft horses in Britain, not only for farming, business, but for every description of work, where strength, agility and docility of temper are required."

That description of one hundred years ago fits in well with the requirements of the heavy draft horse in these modern times. A draft horse must have strength, it must have good action, it must be docile of temper and it must be sound. Measured by these four requisites, how does the Clydesdale of to-day qualify as a draft horse?

Strength.—The well bred Clydesdale has size and weight, a weight made up of good working material, neither blubber nor beef, but power-producing, load-pulling muscle and bone, enough of it to afford efficiency in strength, momentum, stamina and power. Every pound of weight in the Clydesdale is of the right stuff and can be utilized to the full in steady pulling power, and this is what counts in day in and day out hauling a heavy load on city street or country road or in the field before a plow.

Action.—We are not over stating matters when we say that the Clydesdale excels all other draft breeds in quickness of action and correct movement. And it comes by these good qualities naturally. Ever since the Clydesdale has been known as a distinct breed, breeders have laid special stress upon quality of under pinning. And it is because of the emphasis placed upon feet and legs during all these years that the Clydesdale of to-day stands out above all other draft breeds in point of action and correct movement. The feet must be large, round at the hoof heads and open with a good heel; the pastern long and sloping; the canons short flat and hard, and the quarters well muscled. These qualities the modern Clydesdale has to a marked degree, and which make it excel in quick action and strong pulling power. The manner in which the legs of a Clydesdale are set under him has much to do his superior pulling and staying powers as a draft horse. The shoulder is

noted for its obliqueness and high withers, which gives the Clydesdale its superior stride. The legs are carried squarely under him and follow each other in a straight line with the points of the hocks inclined inward and not outward. An English authority has put it as follows: "A Clydesdale must stand with his hind legs in regulation military fashion—heels in and toes out". It is these qualities in the Clydesdale that produce the correct mechanical progression, which is a very desirable feature of the useful draft horse.

Soundness.—The Clydesdale is superior to any of the other draft breeds in soundness. Breeders of Clydesdales during the past century and a half who have constantly sought for the proper set of feet and legs and quality of bone knew well what they were about. It is this superior quality in the under pinning that gives the Clydesdale its prominence in soundness and good wearing character, qualities that are of great value in the heavy draft horse.

Temperament.—The "docility" of the Clydesdale of the last century is true of the Clydesdale of to-day. The Clydesdale though docile is not of a sluggish nature. When properly trained, it responds to the word of command quickly and with a spirit that gives pleasure to the driver. This is a valuable quality in a draft horse. No time is lost in getting away with a load. The ready respond to word of command or movement of the reins adds greatly to its value for transport work on city streets.

In this necessarily brief description one cannot go fully into all the factors that have entered into the development of the Clydesdale as we have it to-day. By unswerving adherence to an ideal, a type has been produced that has undergone no change for almost two centuries, except in improvement of its quality and an increase in beauty of conformation. This is of the utmost importance in producing the draft horse. The type is fixed and as the real test of the superiority of any breed rests with the ability of that particular breed to beget geldings of high class when mated with suitable mares the Clydesdale stands clearly at the top for this purpose. Clydesdale geldings of size and quality make the best draft horses in the world. They have action, soundness and stamina possessed by no other breed. Users of draft horses both in this country and across the water bear testimony to this fact.

A word to the wise is sufficient. Mindful of the fact that the draft horse of size and quality is the one that commands the top price in the market to-day and will continue to do so for many years to come. Clydesdale breeders must aim to combine weight and size with quality of feet and legs, in their breeding operations. Choice heavy draft horses of quality are very scarce to-day, and they will be scarcer still in the years to come. The farmer to-day who breeds his mares to a good Clydesdale stallion stands to reap a rich reward when the young stock comes to maturity.

INSECTS LOWER MILK YIELD

A fact not fully appreciated even among farmers is the economic loss in milk production caused by mosquitoes and flies. An Ohio dairyman owning 20 cows devised a home-built fly-trap, and after it had been in operation a week calculated the difference in milk production. He was obtaining 11 gallons a day more than when the flies were unrestricted in their pernicious activities. In low-lying localities where insects have favorable breeding conditions, the late spring mosquito scourge is so bad as to destroy the profits in milk production. Some farmers wash their herds with preparations, manufactured commercially, which effectively reduce the pest. But the great majority of herds continue to go through the fly season protected against flies only by the weapon with which Nature equips them—the tail—and an inefficient weapon it is, too, beside what the dairyman could furnish. The cow which spends the entire day fighting flies does not consume the roughage needed for maximum yield at night.

The Ohio man built a lean-to, through which the herd passed. Across it in the middle were flexible curtains fitting closely about the cow which brushed the flies off. The dairyman, following, closed both doors, leaving the flies to cluster on a window, where they were quickly shot to death with fly powder.

Did the cattle appreciate this device? Indeed they did, to such an extent that they soon learned to go through it without driving. — *Scientific American.*

THE DAIRY

THE BACTERIAL CONTAMINATION OF MILK

Much has been said and written regarding the bacterial content of milk as received in the cities from the dairymen, and the same holds good for the milk delivered at creameries, cheese factories and powder factories, for manufacturing purposes.

The results, as published by bacteriologists, were certainly appalling, and the dairymen producing this infected milk have been accused of everything in the world, including murder.

For years we have had an opportunity to examine milk produced under different conditions, and at different periods of the year, and we will try here to classify the bacterial contamination of milk under its proper headings.

In the first place we have all the contamination of milk during milking, and in the stable, before the milk is ready to be poured in the milk cans. This stable contamination has always been considered the cause of nearly all poor milk, and it will be a surprise to our readers that milk up to the can stage seldom contains more than 20,000 bacteria per c. c. Of course, there are very negligent dairymen who have many times this number of bacteria in their milk, but more than 95% of the milk produced in Canada comes under this standard.

Keeping this fact in mind, it will be evident that very little improvement is possible in this department of milk production, and that expensive innovations will show very little result. In giving these facts, we did not include milk produced by milking machines, because milk produced mechanically has sources of contamination all its own.

The contamination due to milking machines is similar to the contamination caused by milk cans. The only difference is that milking machines receive more or less care than the milk cans, entirely dependent on the season of the year. Dairymen using milking machines usually show in their milk whether they are busy or not. During the busy days of ploughing, seeding and cultivating, the milking machines are badly neglected, and the bacterial content of the milk jumps into the millions. When the work slackens the machines receive their due care, and are fairly satisfactory from a sanitary standpoint. As a rule, however, this machine milk has not the keeping qualities of hand drawn milk.

Next we come to the infection directly due to the condition of the milk cans. Cans cleaned by the majority of mechanical can washers are in a very poor condition when kept closed for 24 hours, in warm weather. The slight amount of moisture and milk residue left in the warm cans makes an ideal food supply, and the warm, damp air in the closed cans gives the bacteria many advantages for development. A count of 50,000 million bacteria obtained by a simple rinsing with sterile water is nothing unusual, and all stable infections are relegated to the background by this bountiful source of bacteria. An infection caused by dirty milk cans is easily recognised always through the large numbers of *B. Coli* (colon bacilli) which appear in the milk.

To remedy this infection is not so easily accomplished. Some dairymen put their cans upside down on racks with the covers off, so that the dirty water can leak out and the clean, dry air can get in. This, combined with a simple rinsing in cold, clean water just before pouring the milk in the cans, is most successful. To sterilise the cans just before filling them with milk, in scalding water, makes it so much more difficult to cool the milk in the proper time.

An infection of 50,000 million bacteria to 8 gallons of milk is equal to an addition of more than 1 million bacteria per c. c. of milk, and the chances to keep milk for half a day or longer in hot summer weather would be very slim. On an average, the infection due to the milk cans will vary between 100,000 and 1 million bacteria if the cans are kept with the lids on, and less than 100,000 otherwise.

Finally, the milk containing the accumulated infection of milking and milk cans must be kept overnight in a water tank. Most up-to-date farmers have concrete tanks which are filled by pumping from a well and when the heat is not too intense the milk can be kept below 65 degrees F. by changing the water once late at night.

Even at 65 degrees F. bacteria will increase rather rapidly, and a count in the evening of 300,000 will be in the morning between 1½ and 2 millions.

To go into any further details would make this article too long, but with the facts at hand it is very evident that any improvement in the general farm milk supply will have to be accomplished through better care of the milk between the milk pail and the consumer. The average milker knows his job and turns out a very creditable product.

J. VANDERLECK

THREE YEARS OF CHEESEMAKING IN CANADIAN DAIRY FACTORIES

The table below is from the report on Dairy Factories, issued by the Dominion Bureau of Statistics as a unit in the Census of Industry series and gives the Production and Value of Factory Cheese by Provinces, 1915, 1916 and 1917.

CHEESE FACTORIES.

Province.	1915	1916	1917	1915	1916	1917
	lb.	lb.	lb.	\$	\$	\$
Prince Edward Island....	2,260,000	2,121,736	1,599,885	327,700	409,495	333,723
Nova Scotia	125,580	94,727	67,497	18,837	17,051	14,269
New Brunswick	1,086,413	1,067,068	1,188,296	156,660	189,618	245,629
Quebec	34,932,111	38,059,681	40,024,037	4,898,358	6,873,544	8,361,081
Ontario	100,676,000	101,535,235	114,319,617	15,124,100	18,784,018	24,318,420
Manitoba	726,725	880,728	1,003,646	109,008	158,931	199,036
Alberta	90,680	135,435	104,649	14,691	24,728	22,692
British Columbia	—	—	35,000	—	—	10,655
Canada	139,897,519	143,894,610	158,342,627	20,649,354	26,457,385	33,505,505

COMBINED FACTORIES.

Prince Edward Island....	—	—	635,100	—	—	132,594
Nova Scotia	—	—	—	—	—	—
New Brunswick	79,238	118,596	55,810	11,425	21,075	12,016
Quebec	19,285,002	23,847,069	27,810,980	2,673,333	4,371,560	5,811,192
Ontario	24,325,136	24,480,635	6,853,469	3,707,313	4,528,917	1,453,524
Manitoba	—	—	—	—	—	—
Alberta	290,942	609,687	1,170,256	53,750	129,725	257,493
British Columbia	10,000	18,000	36,094	2,000	3,960	8,299
Canada	43,990,318	49,073,987	36,561,709	6,447,822	9,055,237	7,675,118

ALL FACTORIES.

Prince Edward Island....	2,260,000	2,121,736	2,234,985	327,700	409,495	466,317
Nova Scotia	125,580	94,727	67,497	18,837	17,051	14,269
New Brunswick	1,165,651	1,185,664	1,244,106	168,086	210,693	257,645
Quebec	54,217,113	61,906,750	67,835,017	7,571,691	11,245,104	14,172,273
Ontario	125,001,136	126,015,870	121,173,086	18,831,413	23,312,935	25,771,944
Manitoba	726,725	880,728	1,003,646	109,008	158,931	199,036
Alberta	381,632	745,122	1,274,905	68,441	154,453	280,185
British Columbia	10,000	18,000	71,094	2,000	3,960	18,954
Canada	183,887,837	192,968,597	194,904,336	27,097,176	35,512,622	41,180,623

TOTAL EXPORTS OF BUTTER AND CHEESE

Total Exports of Canadian Butter and Cheese, by Quantities and Values, 1901-1918

Year	Butter		Cheese		Year	Butter		Cheese	
	Lb.	\$	Lb.	\$		Lb.	\$	Lb.	\$
1901..	16,335,528	3,295,663	195,926,397	20,696,951	1910..	4,615,380	1,010,274	180,859,886	21,607,692
1902..	27,855,978	5,660,541	200,946,401	19,686,291	1911..	3,142,682	744,288	181,895,724	20,739,507
1903..	34,128,944	6,954,618	229,099,925	24,712,943	1912..	8,844,402	2,077,916	163,450,684	20,888,818
1904..	24,568,001	4,724,155	233,980,716	24,184,566	1913..	828,323	223,578	155,216,392	20,697,144
1905..	31,764,303	5,930,379	215,733,259	20,300,500	1914..	1,228,753	309,046	144,478,346	18,868,785
1906..	34,031,525	7,075,539	215,834,543	24,433,169	1915..	2,724,913	639,625	137,601,661	19,213,501
1907..	18,078,508	4,011,609	178,141,567	22,006,584	1916..	3,441,183	1,018,769	168,961,583	26,690,500
1908..	4,786,954	1,068,703	189,710,463	22,887,237	1917..	7,990,435	2,491,992	180,733,426	36,721,136
1909..	6,326,355	1,521,436	164,907,139	20,384,666	1918..	4,926,154	2,000,467	169,530,753	36,602,504

¹ Nine months.

TO HAVE BETTER CALVES

1. Give suitable feeds—what the calf likes—and avoid over-feeding.
2. Feed regularly—make all changes gradually.
3. The light, cheerful pen in winter and the dark, cool pen in summer give best results. Both must be clean, well bedded, well ventilated, and free from draughts.
4. Feeding gruel too hot blisters the mouth and muzzle, feeding too cold may scour the calf. Keep the temperature uniform.
5. Don't forget the regular salting and fresh drinking water.
6. Remember that variety and palatability in nourishing feeds make toward successful feeding.
7. Destroy worms, ringworm, and lice.
8. Proper quarters and clean feed will largely prevent infectious diseases.

E. S. ARCHIBALD,
Dominion Animal Husbandman.

Skim-milk is the best single substitute for mother's milk, but if not available may be replaced with buttermilk, whey or a good calf meal.

EARNINGS AND RUNNING EXPENSES OF RAILWAYS

The following table taken from the 1918 report on Railway Statistics, issued by the Department of Railways and Canals, shows the totals of gross earnings and operating expenses of Canadian railways since the year 1875:—

Year.	Gross earnings.	Operating expenses.	Percentage of operating expenses to earnings.
	\$	\$	
1875	19,470,539	15,075,532	81.1
1881	27,987,508	20,121,418	71.9
1887	38,841,609	27,624,683	71.1
1893	52,042,396	36,616,033	70.3
1899	62,243,784	40,706,217	65.3
1905	106,467,198	79,977,573	75.2
1911	188,733,494	131,033,785	69.4
1916	263,527,157	180,542,259	68.9
1917	310,771,479	222,890,637	71.7
1918	330,220,150	273,955,436	82.9

POULTRY

COOPERATION BETWEEN POULTRY ASSOCIATIONS AND THE DEPARTMENT.

The Journal adopted as Organ of the Associations.
A Provincial Fair Proposed.

The following is a gist of the more important resolutions adopted at the Convention of the Province of Quebec Poultry Association, lack of space preventing the publishing of complete reports submitted by the various committees.

1.—That every effort be put forward by the Province of Quebec Poultry Association and the local associations in co-operation with the Department of Agriculture in developing the poultry industry to meet the enormous annual deficit in eggs and poultry meat.

2.—That a provincial poultry show should be held annually, during January in a centre chosen by the Province of Quebec Poultry Association. The classification for this show should be liberal and on a par with the provincial shows of other Provinces. Special attention should be paid to utility classes, dressed poultry, and eggs.

3.—That each local poultry association should hold a show annually and to the shows where no admission fee is charged the Department of Agriculture is urged to provide a grant of sixty-five per cent of the prizes paid. The poultry shows should be arranged in circuits to avoid clashing of dates, to enable the securing of the best possible judges, to minimize expenses in regard to caging, and to standardize the management of all shows with reference to prize-lists, entry-forms, tags and other matters.

4.—That each local poultry association should render to the Province of Quebec Poultry Association annually a report of its activities for the year. The financial year of each association should end at about the same time in order that all reports may be in the hands of the secretary of the Provincial Association at the same time.

5.—That the Province of Quebec Poultry Association should render to the Department of Agriculture an annual report covering the activities of the Association for the year.

6.—That the French and English editions of the Journal of Agriculture become the official organs of the Associations and that the matter be brought to the attention of the members of local associations.

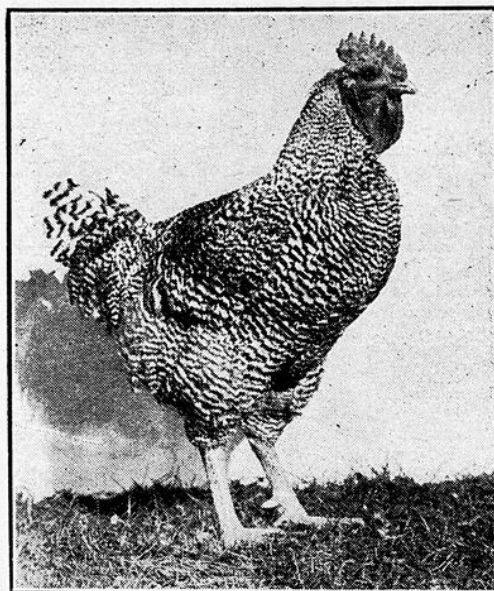
LOCAL POULTRY ASSOCIATIONS

Notwithstanding the good work which the associations have been doing in the past, more effort should be put forth to exert a greater influence in the various committees, particularly in regard to getting people interested in utility poultry breeding work. A great field is open for more progressive work on the part of the local poultry associations. Each association should endeavour to secure a larger membership, hold more interesting meetings, one or two being open meetings which farmers are invited to attend. There is much room for improvement in the local poultry show, particularly in regard to providing utility classes for the more popular breeds, classes for amateurs, classes for farmers, dressed poultry classes and egg classes. It is particularly in this direction that the poultry association can be of greater service in developing the poultry industry of the Province.

Each association was urged to publish a report of the same character as the excellent report recently published by the Ottawa Poultry Association. Finally, the benefits derived from intimate co-operation with the Provincial Association were discussed and it was resolved that everything possible should be done to help the Provincial Association in carrying out its work.

BROME COUNTY POULTRY SHOW.

The Brome County Poultry Association held its annual show at Knowlton on December 16th and 17th, 1919. The show this year was one of the best the association has ever held. The prize list has been changed somewhat, and at present greater attention is being given to the Utility breeds, Barred Plymouth Rocks, Rhode Island Reds, and White Wyandottes receiving most attention. A substantial increase in the prize money has also been provided, and at present the prizes for utility pens is as follows:—1st, \$10.00; 2nd, \$7.00; 3rd, \$4.00; 4th, \$2.00; 5th, \$1.00. This is for classes of six entries or over. Like increases in the prize money has been made possible through the Quebec Department of Agriculture. The united efforts of the Poultry Division of that Department and the Provincial



This is a good type of male bird to use as a breeder. His mother laid 244 eggs, his maternal grandmother laid 228 eggs and his paternal grandmother 259 eggs.
Poultry Department Macdonald College, Que.

Poultry Association have made possible to grant 80% of the prize money for utility classes and 50% of the prize money for other classes. With assurance of this kind a number of the poultry associations feel confident of success.

The total number of birds at the show was 350, and the management in the hands of Mr. A. T. Woodley left nothing to be desired from the standpoint of the exhibitors, the visitors, or the birds in the show. Judging started at noon on Tuesday and was completed by noon on Wednesday. The greatest amount of interest was shown in the utility classes, especially the Barred Plymouth Rocks. The pen class of this breed brought out 9 entries and the quality in some of the pens was very fine indeed. Special mention should be made here of the winning pen in Barred Rocks. These were owned by Rev. Mr. Loomis of Warden, Que., and showed careful selection and good breeding. Others who deserve special mention are M. T. Armitage of Sherbrooke, and J. Raymond Ball of Knowlton. The utility breeding pens in White Wyandottes brought out three entries and Rhode Island Reds 2 entries. The class for utility trios brought out as follows: Barred Plymouth Rocks, 4 entries; White Wyandottes, 3 entries; Rhode Island Reds, 4 entries. The single classes in utility were as follows: Barred Plymouth Rocks, 19 entries; Rhode Island Reds, 24 entries; White Wyandottes, 13 entries.

The classes of Leghorns, Cornish, Turkeys, Geese and Ducks were larger than on former occasions and comprised some very fine birds.

The leading breeders were as follows—C. J. Wright, M. T. Armitage and Geo. Lorthrop. Sherbrooke, Rev. Mr. Loomis of Warden, A. P. Hillhouse and C. P. Hunter of Bondville, J. Raymond Ball and A. T. Woodley of Knowlton; and W. E. Philips of Foster.

The directors of this association have every reason to be satisfied with the show of 1919. Mr. Crevier, Secretary of the Provincial Poultry Association was present and rendered valuable assistance and advice during the entire show.

A. G. T.

THE DISTRIBUTION OF EGGS FOR HATCHING TO THE SCHOOL CHILDREN IN 1919.

Utility poultry is replacing the mongrel or cross-bred birds on the farms in this province very rapidly during the last few years. The market for poultry and eggs was never better than at the present time and the producer is learning that the utility bird produces eggs of a more uniform size and color, and a dressed bird of the desired size for the average family than did the crossbred or mongrel type of fowl.

To assist and encourage the farmers in the province in replacing these mongrel birds with pure bred birds of a utility type the Poultry Department of Macdonald College distributes to the children of the rural schools each year a number of settings of eggs for hatching purposes. These eggs are all of one breed, the Barred Plymouth Rock being used on account of its adaptability to farm conditions,

In the spring of 1919 a total of 758 settings were distributed in the following counties:—Pontiac, 125 settings; Huntingdon, 27 settings; Richmond, 64 settings; Sherbrooke and Stanstead, 203 settings; Compton 108 settings; Brome, 41 settings; Missisquoi, 76 settings; Argenteuil, 50 settings; Wright, 28 settings; Wolfe, 11 settings; Megantic, 25 settings—twelve eggs constituting a setting.

During the month of September 25 school fairs were held in various centres throughout the above mentioned counties where eggs were distributed. The place where each fair was held together with the number of poultry exhibitors and the number of chickens shown, with the average number of chicks per setting, appear below:—

County	Place of fair	No. of Exhibitors	No. Chicks Shown	Average
Pontiac	Clarendon	20	135	6.7
Pontiac	Bristol	11	37	3.4
Pontiac	Quyon	9	46	5.1
Pontiac	Chapeau	4	18	4.5
Pontiac	Campbell's Bay	18	112	6.2
Huntingdon	Huntingdon	14	67	4.7
Wolfe	Bishop Crossing	10	76	7.6
Megantic	Inverness	7	48	6.8
Richmond	Richmond	17	100	5.8
Richmond	Danville	18	127	7.0
Richmond	Bromptonville	15	73	4.8
Sherbrooke	Sherbrooke	9	69	7.6
Sherbrooke	Lennoxville	29	181	6.2
Stanstead	Ayers' Cliff	41	276	6.7
Compton	Cookshire	17	103	6.0
Compton	Bury	14	93	6.6
Compton	Scotstown	16	107	6.6
Compton	La Patrie	13	78	6.0
Brome	Brome	20	126	6.3
Brome	West Bolton	6	39	6.5
Missisquoi	Dunham	27	182	6.7
Missisquoi	Clarenceville	14	78	5.5
Argenteuil	Lachute	26	183	7.0
Wright	Luskville	3	13	4.3
Wright	Aylmer	11	46	4.2
		389	2413	

The above list shows that 389 children took part in the poultry classes of the school fairs, which means that 389 more farm flocks in the province have introduced blood of a utility breed in 1919, and also that a like number of boys and girls are taking a deeper interest in the poultry department of the farm. This is a very good way to get the children on the farm interested in agricultural affairs. Due to unavoidable circumstances a number of children did not show their chickens at the school fair. It is regrettable that children in remote districts find it impossible to attend the school fairs because of distance, climatic conditions or lack of help on the farms, for there is a great deal that the children may learn by visiting the fair and seeing what other children are doing, even though they never win a prize. The fact remains that the benefits to be derived from the introduction of new blood into the poultry flocks on the farm are almost as great even though the child did not have a chance to exhibit at the school fair.

Suitable prizes were offered at each school fair for the best flock, best five birds, best trio, best cockerel and best pullet. In addition to the prizes for chickens most of the fairs had classes for one dozen eggs and for chicken coops made according to the directions sent out by the College. Both these classes proved very popular where they appeared on the prize list. As many as twenty dozen eggs appeared at some of the fairs and the carpenter work on some of the chicken coops was very fine indeed. Competition was keen in most cases, and the interest shown by the children, and by the older people as well, was very gratifying.

Short talks were given by the judge, when time would permit, explaining in detail the placing of the awards and the methods approved of for showing chickens. Advice was given also as to the best means of improving the farm flock by the use of male birds from the settings of eggs obtained. Quite a number of children sold male birds to farmers which shows that a keen interest is being taken in the improvement of the farm flocks. In this way the good work is not confined to the farms which received the eggs but is stretching out over the whole community.

The Poultry Department of Macdonald College hopes to establish through this extension work, a keener interest in poultry keeping, to increase the number of birds kept on each farm by making the flock more profitable, to increase egg and meat production and by so doing place the poultry department of the farm on a paying basis.

A. G. TAYLOR.

THE NEEDS OF QUEBEC

By A. P. Hillhouse, Bondville, Que.

I have been requested to say a few words on, the Needs of Quebec, (Poultry being the subject) and, in order that this may be more intelligently presented and more fully discussed, I have prepared this in the form of a paper.

I am going to take up this subject under three heads,

- First : The Needs of the People.
- Second : The Needs of the Province.
- Third : The Needs of the Government.

This could be better handled, if again subdivided under many other heads, but time will not permit and, if you will kindly bear with me, I will try and present it to you in this form as briefly as possible considering the ground we have to cover.

The Needs of the People : These are many and varied and, if entered into in detail, would occupy many days of careful study and discussion. Fortunately one of the greatest needs of any people is most abundantly supplied; markets. We have, within the Province and available to every shipper, one of the best markets of the world. Montreal is the fifth largest market in the world and, I believe, equal to or better than any of the other markets which exceed her in size.

I have been actively interested and occupied in marketing poultry for the past twenty-five years, and have shipped live and dressed poultry to Liverpool, London and New York; To the Far West and Far East of this continent, and even as far as British Guiana in South America, the latter occupying a passage of six weeks in delivery, but have failed at every point to find a better market than Montreal. I have seen the price of live poultry advance from 5c to 40c per lb. and dressed poultry correspondingly, and nowhere has the advance and demand been greater than in our own city of Montreal. This being the case gentlemen, what is the greatest need of the people of this Province? This is covered by one word, PRODUCTION. We should be impressed and enthused with the possibilities before us, and it only remains for us to take advantage of this condition, to provide a greater cash return for our time and labor on the farm, and by so doing, materially increase the value of Agricultural products, decreasing our imports by increasing our output, thereby showing up a better trade balance which is most important to any Province or country.

The growing Jewish trade is a most interesting feature in the situation and full of great possibilities for the producer. Owing to peculiarities of their belief they must have live poultry at all seasons of the year, and cannot depend on cold storage stock, consequently, they pay very high prices at certain seasons. In fact it is now difficult for them to secure what they require at any time, with the exception of a few of the fall months. Producers who will study this trade can provide for themselves a comfortable living, even with the excessive high prices of feed at the present time. A campaign of education seems to be always necessary for both producer and consumer, and can never be relaxed. The Producer must be impressed with the importance of producing more and better poultry, of better breeds and strains, suitable housing, intelligent feeding and modern methods of incubation. You cannot wait for the natural means of incubation any more than we can go back to the natural laying qualities of the laying hen. We could not make it profitable to go back to her natural laying qualities which were about 3 settings per year and to hatch and rear each setting, we now expect her to lay about 150 to 200 eggs per year. This, with the necessity of early pullets for egg production, makes it impossible to depend on the mother hen for incubation.

It is also important that the consumer should be kept informed on many points. There is a tendency on his part, as prices increase, to adopt a policy of false economy in cutting down consumption of poultry products, not realizing their actual food value and that these, together with dairy products, cannot be substituted without seriously endangering the health of the household and proper development of the family. Therefore, in the interests of the entire people, education and information along these lines cannot be neglected.

The Needs of the Province: are principally, Organization and Cooperation, these being the main-springs of successful production and disposition of all our natural products. The organization of this Provincial Poultry Association is a great step in the right direction and will be of inestimable value to the Province. This Association should be the father of intelligent education and effort, a sort of advisory board, reaching out a helping hand to every part of the Province. Local Poultry Shows should be encouraged and assisted as far as possible, as it is here that the young learn to distinguish the essential points in the different breeds of pure bred poultry, and finally the interest of being the owner of some winning birds, which brings with it a pleasure all its own, which, it is deeply to be regretted, has to be missed by so many boys and girls in this province at the present time.

The poultrymen and agriculturists of this Province are at present handicapped to a certain extent, through the lack of at least one large live stock show where they can assemble together and secure for themselves, as foremost breeders, a reputation which can only be gained by exhibiting at a show of outstanding size and reputation. Every other Province in Canada has a large Provincial Agricultural Winter Fair or show. The Province of Ontario has two; while this province has none. As before stated this is a serious handicap to agriculturists in Quebec.

The Needs of the Government: The Government requires men with a vision, men who realize that Agriculture is the backbone of the country and that it is useless to advocate a "back to the land" movement unless conditions on the land are such as will justify the prospect of a permanent and profitable existence. As soon as Agriculture is made as profitable and pleasant as other occupations the "back to the land" problem will be solved. The drift of people and population is always towards where they consider the best opportunities lie financially as well as in other respects and, until farming operations can be figured out on a business basis, assuring a fair return for time and labor, also a moderate interest on capital invested, we cannot expect a permanent "back to the land" movement or increased production.

The Government can assist in many ways to equalize conditions and in many instances is already engaged in doing so. Especially is this the case with their policy of good roads. This is doing much towards making life on the farm less remote, and the delivery of goods to and from the farms less expensive.

Agricultural Fairs and Poultry Shows should get considerably increased assistance. Owing to increased labor, feed and freight rates, the cost of running an exhibition and also exhibiting has been doubled, and former grants are now quite insufficient.

The labor problem on the farm also deserves serious attention. The recent development of short hours and increased pay, further accentuates the difference between country and city life, and it will require careful thought, and some plan of action to keep the farms from being further denuded of the labor which they now have and which is altogether insufficient.

Speaking for the Eastern Townships I believe the situation can be relieved by further extension of the Government Immigration policy, I am informed that there are many enquiries from organizations and individual in the Old Country stating that there are a large number of girls and women in England and Scotland who have been actively engaged in war work and would now like to come out Canada and assist in anything, either as domestics or outside occupation, but, of course, would want to come to some organization here which would look after them on their arrival. These, if brought on to some of our best farms, would relieve the situation to a certain extent. No doubt there are many of the same class in Belgium and France who would be glad to come to other parts of the Province if required.

And now gentlemen, the fact that we have been asked by our Government to discuss these matters, gives me the assurance that they are willing and ready to institute an advanced programme for the assistance of agriculture and increased production.

SHORT COURSE IN POULTRY HUSBANDRY, MACDONALD COLLEGE

February 10th—13th. 1920.

The annual Short Course in Poultry Husbandry will be given at the Poultry Department, Macdonald College, Ste. Anne de Bellevue, Que., from the 10th-13th of February. This course is intended to supply the demand for practical information and will do much to enable all interested to become more familiar with the principles of successful poultry keeping. For further information regarding the Course enquiries should be addressed to the Principal, Macdonald College, Que.

POULTRY DISEASE INVESTIGATIONS

By Dr. G. E. Hilton, Acting Veterinary Director General, Health of Animals Branch, Ottawa

The Health of Animals Branch at its Biological Laboratory, Ottawa, for a number of years, has been making a study of various poultry diseases. It has been engaged in experimental studies on the cause, cure and prevention of blackhead in turkeys, studies in avian tuberculosis, roup in fowls, the various diseases to which young chicks are susceptible, internal and external parasites of poultry and the perfecting of remedies for their control. The diseases of ducks, geese and pigeons have also been given considerable attention.

Owing to the relative prevalence of certain diseases among the flocks of Quebec farmers and poultry breeders are advised to take every precaution to control and eradicate them. When it is desired to determine the nature of a disease ship by express alive, affected birds to the Biological

Laboratory, Ottawa. The express charges are paid by the Laboratory. It is important to send complete information with the material. Care should be taken to have the name and address written plainly.

CANADIAN EGG LAYING CONTEST

Conducted by the Dominion Experimental Farm at Ottawa, Ont. (Canadian Record of Performance AA.)

The Contest started November 1st and continues for 52 weeks. Each pen in the Contest contains ten birds and the birds in each Pen are numbered from 1 to 10.

B.R.—Barred Rocks; R.I.R.—Rhode Island Reds; S.W.—Silver Wyandottes; W.W.—White Wyandottes; W.L.—White Leghorns.

X—Leading Pens. B—Broody. M—Moulting. D—Dead.

Pen	Owner & Address	Breed	T.
1.	J. R. Stork, St. Catharines, Ont.	B.R.	26
2.	J. E. Rhoades, Ottawa, Ont.	"	159
3.	Vale P. Farm, Montreal Que.	"	7
4.	C. E. Smith, Scotland, Ont.	"	5
5.	Dr. J. A. Lambertus, Eganville, Ont.	"	8
6.	Laurel P. Farm, Montreal, Que.	"	78
7.	Hope Poultry Farm, Ottawa, Ont.	"	51
8.	L. R. Guild, Rockwood, Ont.	"	22
9.	W. J. Johnston, Meaford, Ont.	"	62
10.	F. J. French, Newmarket, Ont.	"	53
11.	F. J. Coldham, Kingston, Ont.	"	46
12.	Mt. Greystone P. Farm, Val Morin, Que.	"	130
13.	O'Brien P. Farm, Barryvale, Ont.	"	0
14.	Laurel P. Farm, Rougemont, Que.	B.Hens.	85
15.	J. R. McMullen, Truro, N. S.	B.R.	106
16.	Ludgate Farm, Eglinton, Ont.	"	38
17.	Mrs. E. Jolicœur, Ottawa, Ont.	"	51
18.	E. C. Powell, 12 Allen P. Ottawa, Ont.	R.I.R.	83
19.	Sta. Avicole, Princeville, P. Q.	"	26
20.	J. A. Duncan, Brussels, Ont.	"	X172
21.	O'Brien P. Farm, Barryvale, Ont.	"	15
22.	W. F. Garland, Ottawa, Ont.	S.W.	73
23.	H. L. Warren, St. Lambert, P. Q.	W.W.	33
24.	H. W. Horsfall, St. Lambert, P. Q.	"	64
25.	L. R. Guild, Rockwood, Ont.	"	141
26.	W. H. Fisher, Axton, Ont.	"	139
27.	E. Palmer, Westboro, Ont.	W.L.	107
28.	Vale P. Farm, Montreal, Que.	"	171
29.	Norfolk Specialty Farms, St. Williams, Ont.	"	52
30.	W. J. Richardson, Caledonia, Ont.	"	54
31.	Walter Rose, Brussels, Ont.	"	6
32.	C. E. Smith, Scotland, Ont.	"	121
33.	C. J. Hodge, St. Thomas, Ont.	"	25
34.	Hope Poultry Farm, Ottawa, Ont.	"	127
35.	S. P. Stewart, Portage la Prairie, Man.	"	28
36.	O'Brien P. Farm, Barryvale, Ont.	"	78
37.	O'Brien P. Farm, Barryvale, Ont.	"	74
38.	L. R. Guild, Rockwood, Ont.	"	78
39.	R. W. Kemp, London, Ont.	"	27
40.	W. M. Alcorn, Hammond, B. C.	"	82
41.	Larkin Farms, Niagara, Ont.	"	71
42.	C. E. Williamson, Woodroffe, Ont.	"	108
43.	Fletcher Bradley, Ottawa, Ont.	"	71
44.	J. E. Vandette, Lachine, Que.	"	100
45.	Agr. College, Winnipeg, Man.	"	108
46.	B. W. Linscott, Brantford, Ont.	"	53
47.	G. S. Gooderham, Clarkson, Ont.	"	86
48.	C. Exp. Farm.	"	86
49.	C. Exp. Farm.	Rocks.	121
50.	C. Exp. Farm.	Dottes.	61

AGRICULTURAL STATISTICS OF THE PROVINCE OF QUEBEC.

1. Comparative Areas Under Field Crops.

Cereals, etc.	Area (acres)	Cereals, etc.	Area (acres)
Spring wheat	1917 277,400 1918 365,670 1919 251,089	Mixed grains	1917 122,819 1918 194,288 1919 157,637
Oats	1917 1,492,700 1918 1,932,720 1919 2,141,107	Flax	1917 5,700 1918 7,357 1919 11,384
Barley	1917 165,600 1918 189,202 1919 234,892	Seed corn	1917 74,339 1918 54,690 1919 43,603
Rye	1917 22,450 1918 29,063 1919 33,481	Potatoes	1917 226,917 1918 264,871 1919 315,590
Peas	1917 66,457 1918 107,386 1919 81,642	Turnips and other lots.	1917 70,192 1918 95,526 1919 87,496
Beans	1917 55,157 1918 109,803 1919 43,202	Hay and clover	1917 2,961,983 1918 4,533,266 1919 4,299,360
Buckwheat	1917 163,577 1918 227,018 1919 170,043	Silage corn	1917 69,030 1918 86,358 1919 74,007

2. Live Stock and Poultry.

	1917 Number	1918 Number	1919 Number
Horses	379,276	496,811	463,902
Milch cows	911,023	1,163,865	1,056,347
Other cattle	958,010	1,245,819	1,213,297
Sheep	849,148	959,070	1,007,425
Swine	712,087	997,255	985,425
Fowl	5,679,278	4,944,021	3,457,480
Other poultry		419,972	351,490

3. Products of the Sugar-bush and Number of Fruit Trees.

	1918	1919
Maple sugar, lbs.	10,173,622	12,157,448
Maple syrup, gallons.	1,928,201	1,470,775
Pears, number.	24,401	13,242
Cherry, number.	406,036	389,121
Apple, number.	1,419,720	1,162,965
Plum, number.	283,039	258,666

4. Culture of Tobacco

Tobacco (1919)	Area (acres)
Tobacco (1919)	22,360

Quebec, Nov. 7, 1919.

WOMAN'S WORLD

WOMEN IN THE NEW YEAR

In looking back over the activities of the past year in the endeavour to see in which of them women appear to have been most actively interested various general tendencies can be noted.

When man-power was so urgently needed at the front, women gradually entered, one after another, occupations formerly considered to be essentially "man's work". Eventually, as practically all occupations were open to her, the fear was expressed that, elated by her new found freedom and independence, she would refuse to give up these occupations when war was over, and that what was called a "sex war" would follow in the industrial world. Nevertheless, no such result seems impending. In many cases women were glad to return to their former duties, especially if these revolved around the business of home-making, since the terrible losses sustained brought a realization of the greatness of the task of "rearing an Imperial race". Some have continued to hold their war-time posts, and it will be interesting to note as time goes on which occupations will be retained by women workers. It seems unlikely that the rougher work connected with transportation, and the heavier work in steel foundries will be much sought by women. Work in banks, on the other hand, seems to appeal to quite a considerable number.

That British women have reaped an advantage, politically, over pre-war days is shown in the recent election of Lady Astor to the House of Commons. This is a long step forward from 1910-14, when after a half century of struggle, British women resorted to violent measures in their determination to secure the suffrage.

In Canada, although we have two women in Provincial legislatures, Mrs. Ralph Smith of Victoria, B.C., and Miss Roberta McAdam of Edmonton, Alta, the personnel of our Federal Government is entirely masculine. However, with Dominion suffrage it will probably not be long until women have also a representative in Ottawa.

That women have grasped the lesson taught by the war of the value and strength of co-operation is shown by various movements in that direction. The federation of Women's Institutes was accomplished last February and the first convention was recently held in Toronto. A movement is on foot for the closer co-operation of Women's Missionary associations connected with the various denominations, a union of domestic servants was formed not long ago in Toronto, and lately a conference of women workers was held having representatives from women in various industrial employments. Co-operation is apparently one of the watchwords of the day.

Successful co-operation demands, above all, a tolerant view of the opinions of others, and a willingness to sink individual preferences and work together for the common good. Intolerance is largely the result of suspicion fostered by ignorance of the lives and aims of others. As knowledge increases we find that other people are much like ourselves, and in fact that there is "so much good in the worst of us, and so much bad in the best of us that it ill behoves any of us to talk about the rest of us". To quote Robert Louis Stevenson "We are a brave cheery crew, we human beings, and my admiration increased daily—primarily for myself, but in a roundabout process for the whole crowd; for I dare say they have all their poor little secrets and anxieties".

And after all co-operation whether in the home, the community or the state, is always found to be a sort of magic key which unlocks the door to that cheerier existence where the individual is not only happier and better, but the whole aggregation of individuals, the great human family, may grow happier and healthier and wiser. Women are sometimes accused of being slow to co-operate, but the things mentioned above would seem to disprove this and it may be that this new year will give further proof of their ability to work together for the common welfare of themselves and humanity. Let us hope so.

B. M. P.

PURE ICE

Many farms have a very important winter crop that is a great aid to the health and comfort of the family during the succeeding heat of summer—the crop of ice. The harvesting and storage of this crop need not entail a great outlay either of labor or material, and the work can generally be done at a time when other labor is barred by the weather. Frequently neighbors combine profitably for a supply.

RELIEF FOR BURN

Baking-soda gives instant relief to a burn or scald. Applied either wet or dry to the burned part immediately the sense of relief is magical.



Our Homemakers' Demonstrators.
Misses Buzzell and Chute snapped while off-duty.

WHAT CAN BE DONE IN A SEWING DEMONSTRATION.

In planning a sewing demonstration one is at a loss to know exactly how to conduct such a demonstration and what information to give.

Sometimes sewing demonstrations are given by means of classes where practical work is done by the women attending these classes. A demonstrator goes to a certain centre and stays for a week or more and forms classes which the women attend. Another plan is for the demonstrator to form classes in several different places, and to visit each place once a week for six or more weeks. Both these ways enable the women to get a good practical course in dressmaking, having to spend only one afternoon a week doing so.

But when only one or two afternoons are allowed for giving a sewing demonstration, practical work must be eliminated. Models can be made to illustrate the lecture; for instance, an undergarment can be so made as to illustrate different trimmings, different methods of applying trimmings, seams, etc. A plain shirt waist and skirt can be made to illustrate cutting, fitting and finishing.

When beginning a demonstration of this kind, a talk can be given on the various textiles and textile adulterants, also certain tests can be given for testing materials for adulteration.

Then the preparations of these materials before they are made up, and how preparations are made should be considered. For instance, white cotton material will need shrinking, white woollens will require to be sponged to insure good pressing, etc.

Patterns can be discussed at a demonstration of this kind, the kind of patterns to buy, precautions to take before cutting by reading and studying charts, directions, etc. Simple alterations that can be made to improve patterns can also be discussed.

Rules can be given for pinning patterns on material, how to cut various materials—velvet, woollen, and also how to cut plain, figured striped and plaid materials.

Trimmings can be discussed; for instance, varieties of lace with their advantages and disadvantages, also embroideries, hand work, etc., and different methods of applying each.

The models which have been made for the demonstration can now be fitted. Someone from the audience is always willing to act as a model. Now a short talk on how to fit can be given; telling how to rectify the common faults that usually occur in dressmaking. For instance, what causes a wrinkle from the neck to the shoulder, and how this can be rectified.

Regarding the skirt, this can be put on a model, and demonstrator can show exactly how to fit and different methods of hanging it.

Then different ways of finishing the neck, how to put on collars, different kinds of sleeves, methods of finishing armhole, bottom of waist can all be discussed.

A demonstration of this kind can be made doubly valuable if the women who attend the demonstration will ask questions, and also give their own experiences in dressmaking, as by such a discussion everyone will be more benefited than by listening only to the demonstrator.

F. A. BUZZELL.

Onions are very liable to rot unless kept in a dry place. Keep them spread out as thinly as possible. An attic room where there is no frost will be found a good place to store them.

HOMEMAKERS' CLUB NOTES

Miss Chute and Miss Buzzell spent the third week in November visiting the Clubs in Ottawa County. New Clubs were organized in Alceve and West Templeton.

Miss Chute and Miss Kirby left for Compton County on November 25th., and spent two and a half weeks visiting the Clubs there. Miss Chute talked on various subjects in connection with the work, Miss Kirby gave demonstrations on "Choosing and Cooking Meats". A new Club was organized at Brookbury.

Miss Buzzell visited the Clubs in Richmond County on November 28th and 29th giving demonstrations in Dressmaking.

Mr. Taylor of the Poultry Department gave a demonstration on "Killing and Plucking Fowl" to the Wakefield Homemakers' Club on November 17th.

LAUNDERING—LESSON VII

THE LAUNDERING OF COLOURED LINENS AND COTTONS

In the laundering of coloured linens and cottons which include zephyrs, gingham, chambrays, linens, prints and other coloured cottons and linens, our aim is to preserve colour and have the material look as much like new as possible each time it is laundered.

To do this it is necessary to purchase the best materials. Where possible, purchase materials which are dyed in the threads rather than printed materials where the pattern is stamped on the surface of the woven threads. As the price of any of these materials to-day is very high, it is quite time we learned something about their care in the laundering.

WE HAVE TWO CLASSES:

1. Fast colours—those which will not fade in washing or in the sun.

2. Loose colours—those which will fade in the washing or in the sun.

Fast colours do not require such great care in handling but look all the better for it. Loose colours, on the other hand, if carefully treated may look well for a long time.

To test the colours, it is best to take a sample home and wash it in hot soapy water using a neutral soap and dry it in the sun, or leave it exposed to the sun for several days.

Then there are several very important means of preserving the colour in laundering which are as follows:—

1. Have everything ready before you begin to wash.

2. Wash quickly and dry quickly.

3. Avoid heat in the washing water, in starching, in drying and in ironing.

4. Avoid rubbing, i.e., do not rub soap on the article, and do not rub on a washboard unless very soiled.

5. Always use a pure melted soap.

6. Avoid the use of any alkali in the washing water such as borax or ammonia, and never use washing soda or any kind of a washing solution.

7. Use a mordant to fix the colour before washing.

The best mordants to use are salt, vinegar or alum. Sugar of lead may be used, but must be most carefully handled because it is a deadly poison. Therefore, it is not safe to have around where there are children, unless the articles used in the laundry can be kept out of their reach. It should also be plainly labelled "poison".

Salt in the proportion of ½ cup to 1 gallon of cold water—used for reds.

Vinegar in the proportion of ¼ cup to 1 gallon of cold water—used for greens.

Alum in the proportion of 1 tsp. to 1 gallon of water—for lavender shades.

Sugar of lead in the proportion of 1 tsp. to 1 gallon of water—for lavender shades.

Any article of clothing you wish to wash, especially for the first time, should be soaked thirty minutes to two hours in a mordant made up of enough cold water to cover the garment, and sufficient salt, vinegar, alum or sugar of lead as the case may be in the above proportion.

When ready to wash, the article should be wrung out of the mordant and rinsed in clear water.

In the case of a very loose colour, salt or vinegar in the same proportion may be used in the last rinsing water to fix the colour.

While the clothes are soaking in the mordant the starch may be prepared in order that it will be cool when ready to use it. We must starch the coloured things always on the wrong side, and do not have the starch too thick.

Now prepare the washing water. If the articles are very soiled we may require two wash waters.

Have the water lukewarm for fast colours. Add to it sufficient melted soap to make a lather. Then wash the article by kneading and squeezing. If there are a number of articles of fast colour which can be washed together, they may be washed with a vacuum washer, or in a washing machine, but rubbing destroys the colour. Loose-coloured articles should be washed one at a time, and care must be taken not to wash any coloured article in the same water you have used for another where any colour has run into the water. Keep the water all at the same temperature. Rinse in two clear waters.

In the case of white grounds with coloured flowers or designs, or pale blues, use a pale blue water for the second rinse.

For dark blues and blacks use deep blue water for the last rinse. Starch as directed.

To dry:—If drying outside, hang the clothes in the shade and where they will not get too much wind as the latter takes out the starch.

If drying indoors do not place near an intense heat.

To dampen:—Sprinkle with tepid water, roll up evenly and tightly allowing them to remain covered up for 20-30 minutes.

To iron:—Iron on the wrong side with a warm iron until dry. When dry any article may be given a final press on the right side with a warm iron and the colour will not be injured. All hems, seams, pockets, etc., must be finished on the right side.

Where you have buttons on a garment make a thick pad of blanket or bath towel, place under buttons and iron on the wrong side pressing heavily on the iron.

To wash natural coloured linens, cretonnes and chintzes with a natural coloured background it is best to use bran water.

Bran Water

1 cup of bran
1 quart of cold water

Method: Put bran in large saucepan and cover with cold water, place over gentle heat, bring slowly to the boil and simmer for one-half hour. Strain through a double thickness of cheesecloth.

To use. Make sufficient bran water by the above method to wash and rinse all the articles you wish to wash. Then dilute the strained bran water with an equal proportion of cold water.

Wash the articles in this bran water by kneading and squeezing. If articles are very soiled a small quantity of melted soap may be added to the washing water.

Rinse in the bran water, wring dry, roll in a cloth or towel for 20-30 minutes. Iron on the wrong side with a hot iron. No starch is required as the rinsing water makes any article sufficiently stiff. Cretonnes and chintzes may be slightly dried before ironing.

To iron curtains—

1. Iron the hem at the bottom.
2. Then iron the selvedge edges or sides and centre as you proceed with the curtain. This keeps the curtain straight.

Hay water

1 cup of hay seed, or a small quantity of hay
1 quart of water.

Make as bran water.

This is good for natural coloured linens or brown holland. It also may be used for tinting. The article must be starched in this case, as the hay water has no stiffening quality like bran water.

J. BABB

GETTING AND SAVING.

Too much of the educational effort of the day is directed towards forming habits of acquiring possession of things, and too little attention is given to saving and making the most of what we get.

There are so many fields in which this text might be developed into a sermon that I choose the one nearest at hand, the saving of transient works of the mind.

There was a time when a printed book had something about it that awakened feelings of reverence. The best thought of the most careful thinkers formed its contents; artists worked in elegant and nearly imperishable material to give it a fitting coat; the highest skill of the printer entered into the arrangement of its pages; and when it reached the hands of him who was to possess it, it was cherished as a treasure to be passed on from generation to generation.

To-day the cheap multiplication of books, the thousand forms of transient periodical literature have cheapened literary work and have nearly destroyed the love for it in a permanent form.

The thoughts of the great thinkers, the deeds of those who have produced such civilization as we have, must be gathered from books, and they must be gathered and studied if the race is to progress.

Are we not working a real injury to our children by neglecting to inculcate habits of discrimination among the vast amount of floating literature, and a desire to choose and preserve the best?

THE DEATH OF THE OLD YEAR

Full knee deep lies the winter snow,
And the winter winds are wearily sighing.
Toll ye the church bell sad and slow,
And tread softly and speak low,
For the Old Year lies a-dying.

Old Year, you must not die;
You came to us so readily,
And lived with us so steadily,
Old Year, you shall not die.

He lieth still: he doth not move:
He will not see the dawn of day.
He hath no other life above.
He gave me a friend, and a true true-love,
And the New Year will take 'em away.

Old Year, you must not go;
So long as you have been with us,
Such joy as you have seen with us,
Old Year, you shall not go.

He froth'd his bumpers to the brim;
A jollier year we shall not see.
But tho' his eyes are waxing dim,
And tho' his foes speak ill of him,
He was a friend to me.

Old year, you shall not die;
We did so laugh and cry with you,
I've half a mind to die with you,
Old Year, if you must die.

He was full of joke and jest,
But all his merry quips are o'er,
To see him die, across the waste
His son and heir doth ride post-haste,
But he'll be dead before.

Every one for his own;
The night is starry and cold, my friend,
And the New Year blithe and bold, my friend,
Comes up to take his own.

How hard he breathes! over the snow
I heard just now the crowing cock.
The shadows flicker to and fro:
The cricket chirps: the light burns low:
'Tis nearly twelve o'clock.

Shake hands before you die,
Old Year, we'll dearly rue for you:
What is it we can do for you?
Speak out before you die.

His face is growing sharp and thin,
Alack! our friend is gone.
Close up his eyes: tie up his chin:
Step from the corpse, and let him in
That standeth there alone,

And waiteth at the door.
There's a new foot on the floor, my friend,
And a new face at the door, my friend,
A new face at the door.

Alfred Tennyson.

COARSE GRAINS FOR HUMAN FOOD.

The public must necessarily judge food very largely by the eye. Green coloured apples are difficult to sell, even when of fine quality, but a red apple will usually bring a good price, even though the actual flavour may be but little better than a turnip. Rice, in order to make it attractive, has to be coated with glucose and powdered talc, by which it gets its fine gloss. Butter must be yellow to please the purchaser and is therefore frequently coloured with a yellow dye. But the public demands wheat flour in as white a form as possible and hence it has often been bleached to remove its natural yellow tint. In bulletin No. 40 "The Use of Coarse Grains for Human Food", which may be had free upon application to the Publications Branch, Department of Agriculture, Ottawa, it is shown that with the advance of civilization and the improving of machinery there has been a tendency to discard the coarse and relatively indigestible substances in our food, with the result that we have reached a stage where most consume too large a proportion of refined material and too little of the necessary coarse and relatively indigestible substances. Lately, however, people have become alarmed and action has begun against what may be fairly called 'over purification of foods'. The object of the new bulletin is twofold; first to show to farmers generally how they can become more nearly self-sufficient as far as the food supply for themselves and their family is concerned, and second to point out for the benefit of other classes of people some ways of economizing in the cost of their food, and at the same time improving the wholesomeness of their diet,

COMMON SENSE ON XMAS TREES.

In connection with the waste resulting from the annual cutting of small evergreens in the Christmas tree trade, as discussed in the January Forestry Journal, the sentimentally dressed but practical remarks of Bristow Adams are noteworthy. With reference with Canadian conditions it may be said that the loss caused in this way is but a small drop in the bucket compared with the annual preventable fire loss. Wasteful logging methods also account for a greater loss than that due to Christmas tree cutting.

In response to the Journal's call for further expression, the following might be suggested. It has been observed frequently that a large number of trees reaching the Christmas market both in Canada and the United States, are black spruce. Insofar as these trees were cut from bog lands the loss of future timber value is insignificant. Canada has many millions of acres of muskeg covered by black spruce that will never make anything else but Christmas trees. Such, in suitable form and size, are readily obtainable in unlimited numbers. Large areas of muskeg are now contiguous to railroads. Being frozen at the time of the Christmas tree harvest, they are easily accessible. Far from the necessity of suppressing this trade, it might thus be developed into a profitable industry.

The procedure is simple. Let forest officers direct the cutting of Christmas trees. In general let this be confined to the muskeg. In some cases valuable young stands elsewhere might be thinned to advantage. In pulpwood operations, many tops of the smaller trees cut might be made to serve. As has been pointed out, many trees growing out of place can be cut with profit instead of loss. All that is needed to minimize waste without sacrificing revenue is a little intelligent direction.

J. C. Blumer, Commission of Conservation.

TEN COMMANDMENTS FOR THE WOMAN IN BUSINESS

by Lillian Burton.

1. Thou shalt not consider thy job beneath thee, lest the truth be discovered that thou art not worthy of thy job.

2. Permit not thyself habitually to wax peevish nor disgruntled, lest thou be dubbed a "sorehead."

3. Hold thy tongue and thy temper always and permit not the roughest storm of personal feeling to disturb thy courtesy to others.

4. Do unto others as thou knowest is right, even if thine own self-respect is thine only reward.

5. Apply thy best social training to thy business behavior and thou shalt be rewarded by treatment in kind.

6. Be true to thine own high esteem of self, but in believing that there is no one any better than thyself, thou shalt not forget that there are thousands of others just as good.

7. Fear not to ask for what thou believest thou dost deserve, lest the impression be gained that thy self-appraisal is low.

8. Give freely and efficiently of thy brain and effort, but see to it that thou receivest just compensation, lest thou give too much on faith in the ultimate result and be disillusioned when it is too late.

9. Be loyal to thy employer and his interests; guard his honor and integrity as thou wouldst thine own, remembering always that, right or wrong, thou art for him and not against—in this way, thy days shall be long in the kingdom of his confidence and worthy esteem.

10. Smile suavely but look like the sphinx when questioned about confidential business or personal secrets; by this method thou canst not be accused of inability to keep thine own counsel, nor canst be discredited for the information thou lackest.

Beets, parsnips, carrots, salsify, and turnips keep best under conditions somewhat similar to potatoes, though it is not so important to keep them dry. Indeed, in the average cellar, they are liable to become too dry and lose their firmness. If there is danger of this, they will be found to keep better if they are packed in clean, dry sand and taken out as wanted.

Johnnie's history class was studying an important period in history and it was Johnnie's turn to recite.

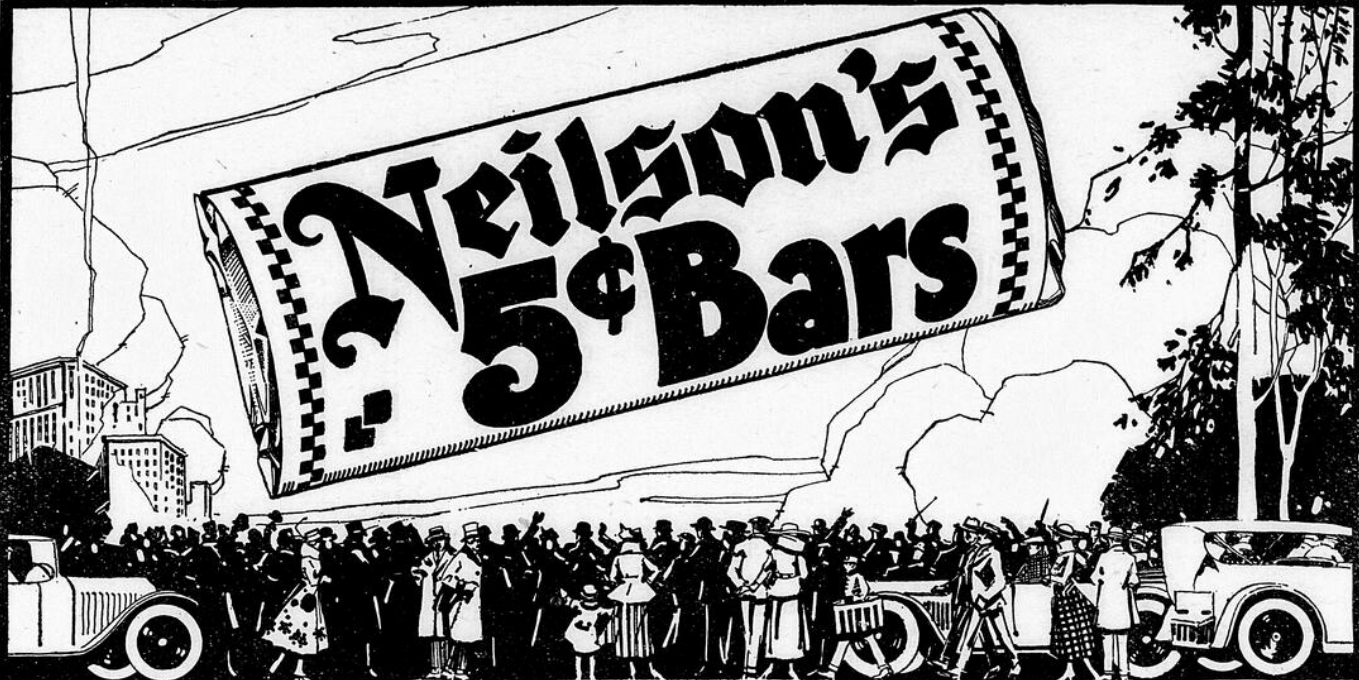
"Johnnie, who was the king at this time?" asked the teacher.

He answered: "Louis the cross-eyed."

"Why, Johnnie, where did you learn that?" she asked.

"Right here in the book," he answered, and showed her the paragraph where the name was printed "Louis XI."

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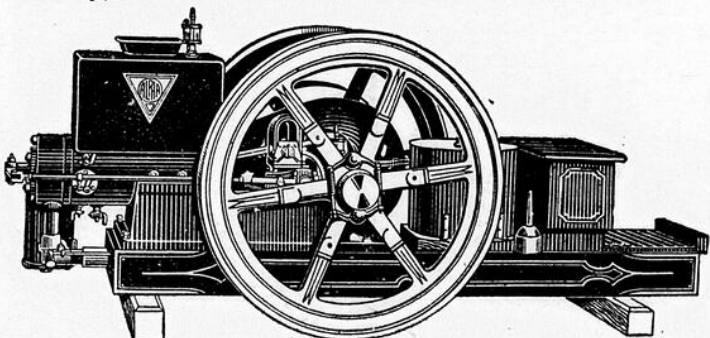
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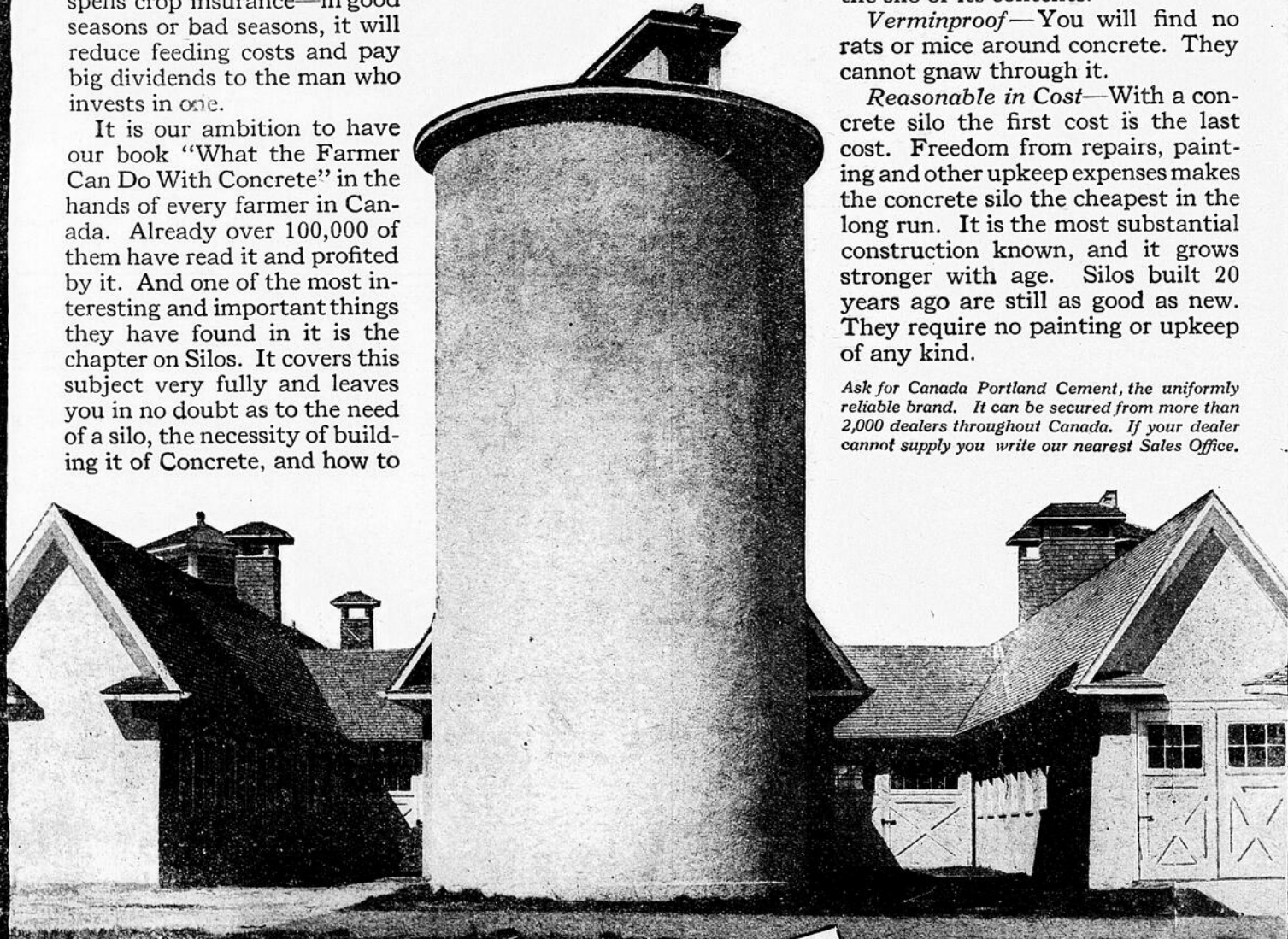
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